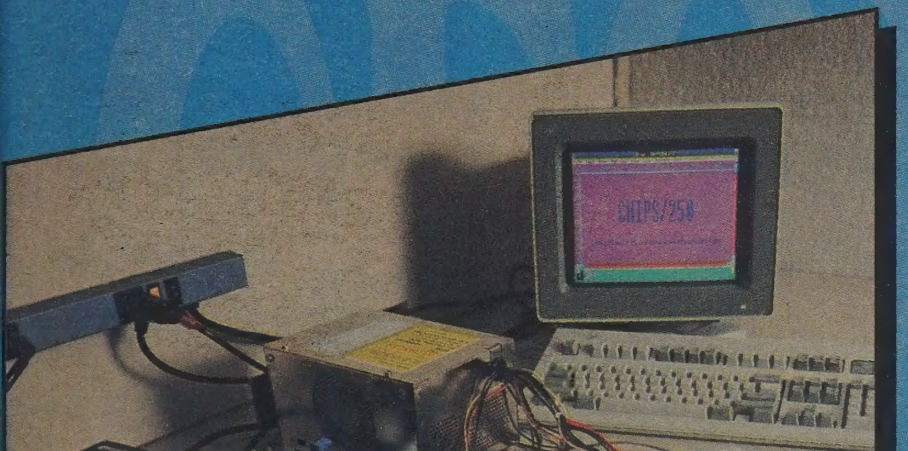
DVORAK'S FAREWELL TO THE MACINTOSH

★ **FREE**

California's Computer Magazine
MAY 1988 • ISSUE 43

MICROTIMES™

CLONING THE PS/2



Chips And Technologies' Ron Yara On Proprietary Technology And The Diverging PS/2 And AT Standards

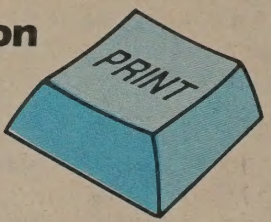
LOOK & FEEL WARS:
- Osborne Fumes
- Lotus Stonewalls
- Apple Sues Microsoft

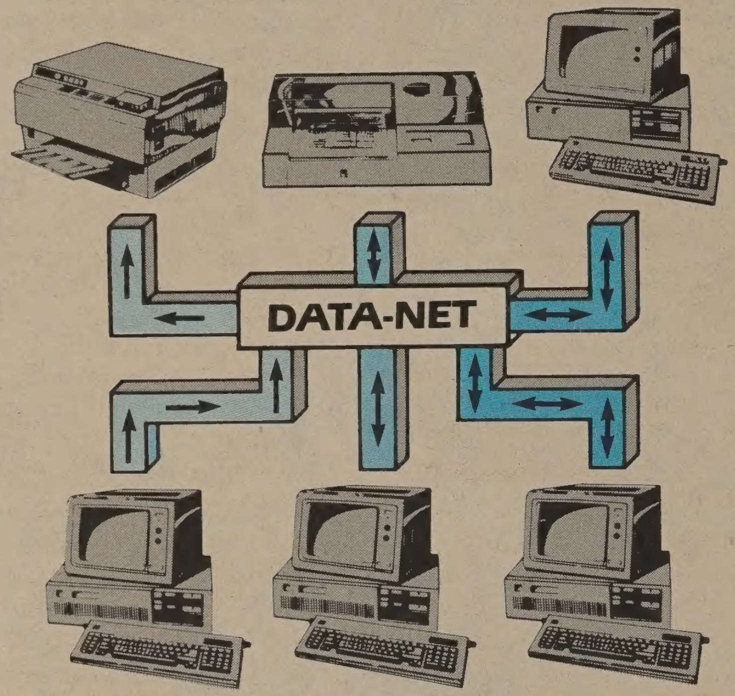
PIXEL PAINT: Mac II Color Graphics

HYPERCARD: Activision's Focal Point

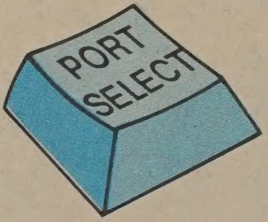
Make a few key moves into networking

Simultaneous Operation

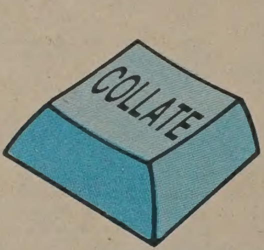




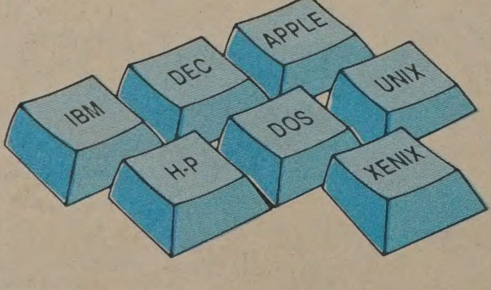
Connect Computer to Computer or Multiple Computers to a Printer

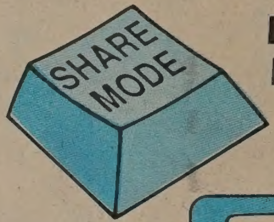

PORT SELECT

Copy or Collate

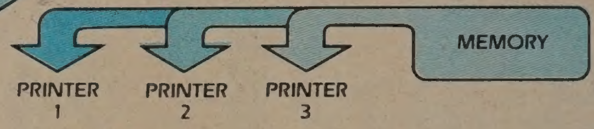


IMC Data Manager Products Are Transparent to the User — No Software to Load!

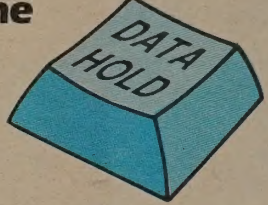

APPLE
DEC
UNIX
IBM
DOS
H-P
XENIX

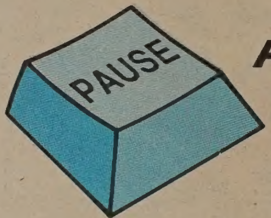


DATA-NET Routes Print Data to the Directed or Next Available Printer


MEMORY
PRINTER 1
PRINTER 2
PRINTER 3

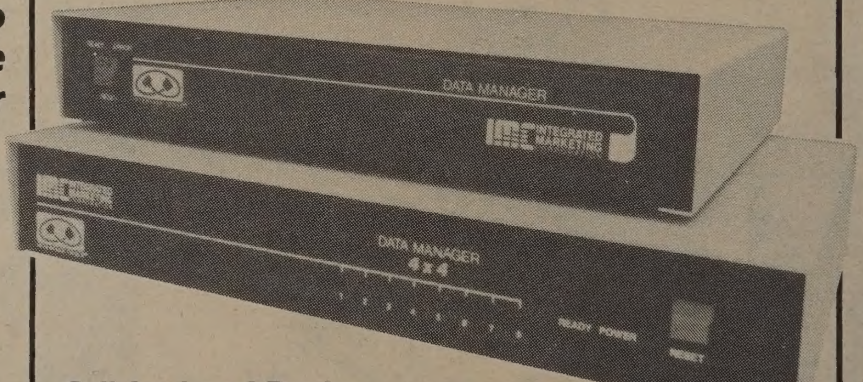
DATA-NET Will Hold the Data You Send to Memory Until You're Ready to Print





Automatic or Manually Controlled Pause Command

DATA-NET gives you all the right connections for PERIPHERAL SHARING


DATA MANAGER
INTEGRATED MARKETING
DATA MANAGER 4x4
READY POWER
RESET

Call for Local Dealer.
OEM & Corporate Inquiries Welcome.

800-537-5999

Integrated Marketing Corporation

INTERFACE TOOLS

See us at
COMDEX/Spring '88
May 9–12, 1988
Georgia World Congress Center
Atlanta, GA Booth #115

1031H East Duane Avenue, Sunnyvale, CA 94086
Telephone: (408) 730-1112
Telex: 5106018576 FAX: (408) 730-1452

Manufacturing & Marketing of "Interface Tools"

More for your money

Here's a system of exceptional value.
And it comes with *50 free disks*
and all the cables
you need!

HIGH TECHNOLOGY DISTRIBUTING COMPANY, INC.
Smart Friendly
AMSTRAD
PC
PC
PC

Best Selling Computer in Europe

In 1986 alone Amstrad® sold more than *1.7 million* personal computers worldwide. How do they do it? By giving you more for your money—like the feature-loaded, IBM®-compatible, Amstrad PC-1640. Features include a motherboard already equipped for Monochrome, CGA, or EGA graphics. Plus you get 640K memory, using an 8086, 16 bit microprocessor operating at 8 MHz. You even get a mouse!

More Features

The Amstrad PC-1640 comes with MS-DOS® Version 3.2 to run thousands of popular software packages. It also runs GEM® windowing software and comes with other GEM programs. It's available in single floppy, dual floppy, and 20 Megabyte hard drive versions. And though the unique Amstrad motherboard eliminates the need for costly add-on boards, three expansion slots are provided for enhancements such as networking capabilities.

Plus there's a battery back-up clock/calendar/alarm, serial/parallel ports, calculator, print spooler, volume-controlled loudspeaker, joystick port, and more.

Choose Your Monitor

The Amstrad PC-1640 comes ready for any of the following monitors: A Paper-White Monochrome Display Monitor (Hercules®/EGA compatible), a CGA Color Monitor, or an EGA Color Monitor displaying 16 colors with 640 x 352 line resolution.

Citizen®—More Printer, too

Choose the 120D or 180D dot matrix printer from Citizen. The 120D offers 120 cps logic-seeking printing in draft mode, and correspondence-quality at 25 cps. Model 180D offers 180 cps logic seeking print speed at 12 cpi and 29 cps near-letter-quality printing at 10 cpi for superior print quality and throughput.

Printer Features

These printers are compatible with either IBM or Epson® software, and have complete graphics capabilities for most high-resolution applications. There's automatic paper loading, rear and bottom paper feed, and a variable width tractor. Proportionally spaced printing is provided too, for a justified, typeset appearance.

Still More Features

There's a 4K-byte built-in buffer for increased productivity. There are 32 downloadable characters and eleven international character sets. The print head is user-replaceable for virtually service-free operation. And these Citizen printers come with a comprehensive 12-month warranty on all parts and labor, including print head.

Disks and Cables FREE

...when you purchase an Amstrad PC-1640, monitor, and Citizen printer (Model 120D or 180D). Disks are top quality Smart & Friendly™ lifetime warranty diskettes—a $199 value. This offer ends April 30, 1988 so hurry to one of the following dealers *today*.

AMSTRAD CITIZEN™ Smart and Friendly

Get **More For Your Money** at one of these High Technology dealers:

DEALERS: For information on how you can become an authorized HIGH TECHNOLOGY reseller, contact us at (818) 994-8001.

CANOGA PARK
SCOTT KELLY COMPUTER
SYSTEMS INC.
20233 BLYTHE STREET
(818) 718-1701

LONG BEACH
BALBOA GAME
DISTRIBUTING
630 WEST WILLOW
(213) 490-0920

LOS ANGELES
MARGIE'S HALLMARK
712 WEST 1st STREET
(213) 617-2273

T.E.J. COMPUTER PRODUCTS
859 NORTH VIRGIL
(213) 669-1418

UNITEC
3158 WILSHIRE BLVD
(213) 388-2400

NORTHRIDGE
COMMERCIAL BUSINESS
SYSTEMS
9514 RESEDA BLVD STORE 13
(818) 701-9510

RESEDA
COMSOFT
17728 VANOWEN
(818) 996-8206

RIDGECREST
RIDGECREST COMPUTER
211 BALSAM AVENUE
(619) 375-4364

SAN BERNARDINO
IHS BUSINESS SYSTEMS
332 ORANGE SHOW LANE
(714) 888-4575

SOUTH PASADENA
TECHNITRONICS
1830 FREMONT AVENUE
(818) 441-0103

SUN VALLEY
COMSOFT
8125 SAN FERNANDO ROAD
(818) 768-5017

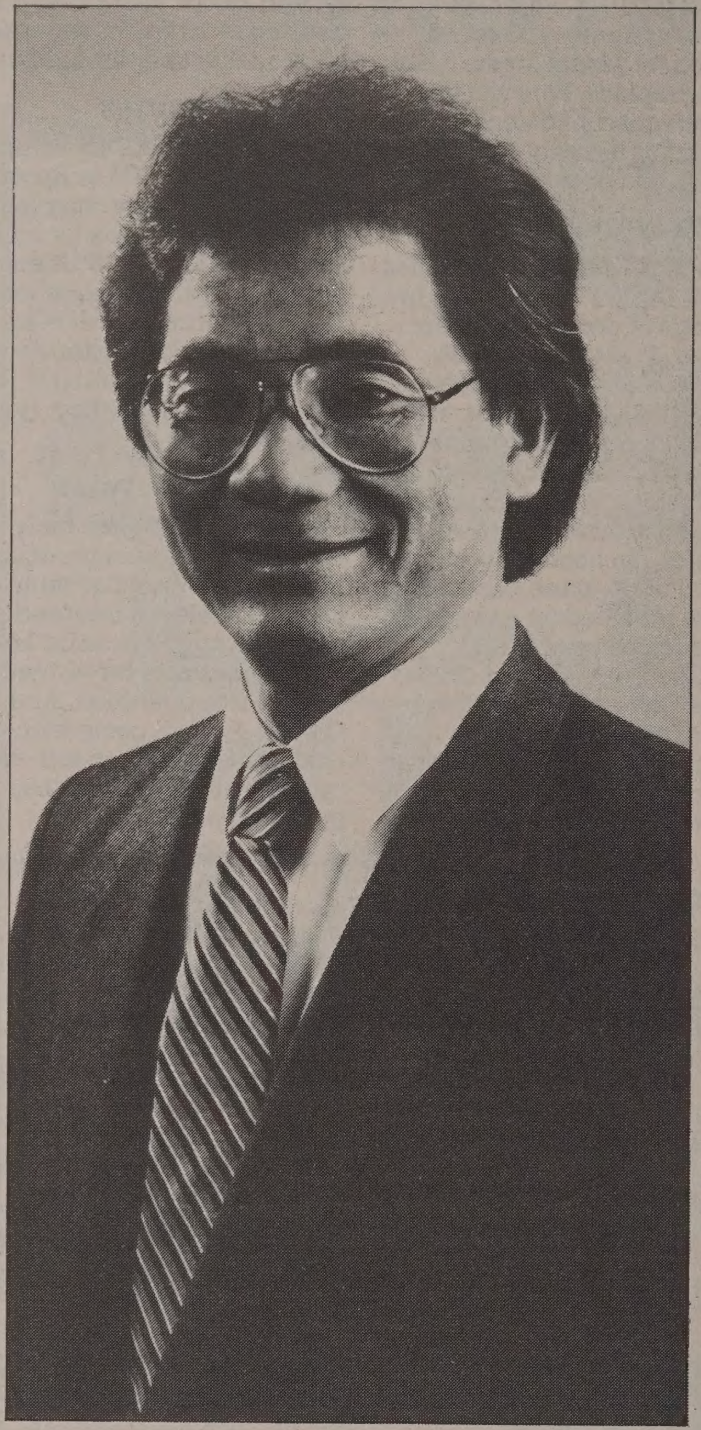
VAN NUYS
CONSOLIDATED COMPUTER
INDUSTRIES
14732 LULL STREET
(818) 780-9491

RON'S VIDEO ELECTRONICS
8313 BARDWELL AVENUE
(818) 901-7335

Amstrad is a registered trademark of Amstrad plc., IBM is a registered trademark of IBM Corp., MS DOS is a registered trademark of Microsoft Corp., GEM is a registered trademark of Digital Research, Inc. Hercules is a registered trademark of Hercules Computer Technology, Citizen is a registered trademark of Citizen Watch Co., Ltd., Epson is a registered trademark of Epson America, Inc.

MAY 1988 ISSUE #43
MICROTIMES

COVER STORY



50 Cloning The PS/2

By Mary Eisenhart and Robert Grant Beauchamp

An interview with Ron Yara of Chips And Technologies, developer of the first chipsets to emulate IBM's proprietary PS/2 technology. Yara talks about legal and technical issues, as well as the apparent evolution of two parallel standards — AT and PS/2.

Ron Yara, vice president of business development at Chips And Technologies talks about the problems—both legal and technical—in cloning the PS/2.

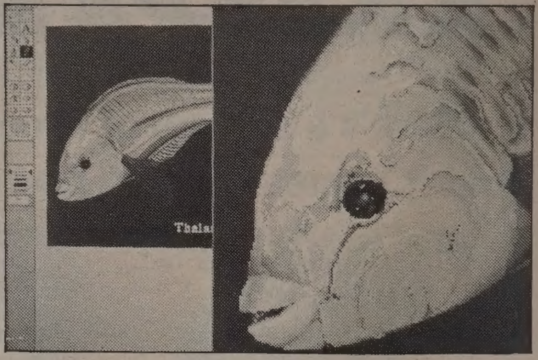
HANDS ON

44 The Abaton 300 Series Scanners

By Lenny Bailes
300-dpi graphics in a variety of file formats.

62 TurboTax

By Birrell Walsh
If you do your own taxes, this program can save you pain, suffering, and money.



This graphic of a Wasselfish shows PixelPaint's use of the fat bits mode.

66 PixelPaint

By Jim Wolcott
SuperMac's Mac-II-only paint package heralds a new era in graphics packages for personal computers.

DEPARTMENTS

9 Calendar Of Events

12 News And Analysis

By Paul Hoffman
Look and feel wars rage on.

26 Reviews

95 Buyer's Guide

96 User Group Network

Featuring our all-new user group and bulletin board listings.

106 Classifieds

108 Index Of Advertisers

COLUMNS

68 PC Systems

By Ken Milburn
No longer a luxury, state-of-the-art graphics are increasingly indispensable in the corporate world.

72 UNIX

By Bennett Falk
Baba Charstar attains enlightenment about the evolving UNIX standard.

76 Telecommunications

By Brock N. Meeks
A look at some popular pocket-sized modems.

78 Links

By Mary Eisenhart
If you've got computer knowledge you'd like to share with nonprofit organizations struggling with the electronic age, CompuMentor would like to hear from you.

80 Macintosh-PC Connectivity

By Robert Beauchamp
Continuing our TOPS saga, we explore the relationship between the Mac and PC versions of Microsoft *Word*.

84 HyperCard

By Birrell Walsh
Birrell Walsh, ex-DOS user, followed his own advice and got a Mac so he could get *HyperCard*. Now he's writing a column about it. This month — Activision's *Focal Point*.

88 Atari ST

By David Hawkins
There are times when the graphical interface isn't what you want. Here's a UNIX-like command line shell for the ST called Gulam.

90 Amiga

By Matthew Leeds
The ARP Project, dedicated to improving the Amiga's operating environment.

92 Apple II

By Mike Markowitz
Memory expansion for the IIGS.

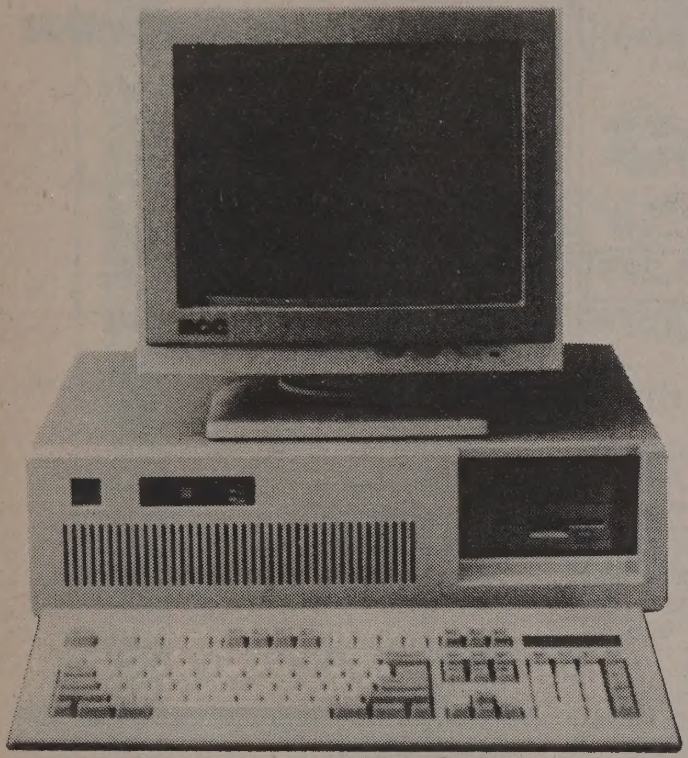
94 CP/M

By Robert D. Athey Jr.
Further evidence that the operating system lives...

110 Dvorak's Last Column

By John C. Dvorak
Macintosh in business, or, kiss the fun goodbye.

ATTENTION PAST BCC CUSTOMERS !



In the open letter from the President of BCC (Microtimes June, 1987) We promised . . .
"THE SALE IS JUST THE BEGINNING OF OUR LONG TERM RELATIONSHIP". You responded!

For the past year, 3 out of 4 BCC customers have been by referral. We are currently going through our records and wish to send a gift of appreciation to those of you who told their friends or companies about us. If you have done so, and not yet received a Gift Certificate by April 1988, please phone us and state the person or the company that you referred.

P.S. The Gift is not Computer related and this compaign ends May 31, 1988.

BCC BINARY COMPUTER CORPORATION

15179 Springdale Street
Huntington Beach, CA 92649
(714) 894-6827

ROBERT LEE
PRESIDENT, BINARY COMPUTER CORP.

- AT COMPATIBLE MOTHER BOARD
- 200 W POWER SUPPLY
- 8 EXPANSION SLOTS & 80287 SOCKET
- CLOCK CALENDER (W/ BATTERY BACK-UP)
- RESET & TURBO SWITCH INDICATORS
- AT ENHANCED KEYBOARD
- SERIAL (MOUSE), PARALLEL(PRINTER), AND GAME PORTS.
- ONE YEAR PARTS AND LABOR WARRANTY

640KB RAM		1MB RAM	
BABY AT-10MHz	**BABY AT/E**	**EGA-10MHz**	**EGA-12MHz**
360K FD 1.2MB FD HERCULES COMPATIBLE MONITOR TUTORIAL SOFTWARE	360K FD 1.2MB FD 20MB SEAGATE H.D. EGA CARD EGA-MONITOR ✱ INTEGRATED SOFTWARE	360K FD 1.2MB FD 20MB SEAGATE H.D. EGA CARD EGA MONITOR ✱ INTEGRATED SOFTWARE	360K FD 1.44MB FD 40MB (28ms) SEAGATE H.D. EGA CARD EGA MONITOR ✱ INTEGRATED SOFTWARE
$ 944	**$ 1,699**	**$ 1,799**	**$ 2,149**

GRAND OPENING SALE

In celebrating the grand opening of our third store in Rowland Heights, we are offering the following special sale prices.

THE ACCELERATOR 286

Replaces your computer's 8088 with an 80286 16-bit processor. It also includes 8K of zero-wait-state cache memory, and your software can run up to seven to nine times faster - faster than IBM AT.

Compatible with all software or any IBM PC, XT or compatible system. Includes 8088 Reboot and Cache enable/ disable switches.

$245

SALES SPECIALS!!!

- Thomson Ultrascan 14" Color Monitor... $495
- TAXAN 765 14" EGA Monitor... $395
- Thomson 4460 w/ EGA card... $515
- 640X480 EGA card.. $125
- Modem, Internal, 1200/2400 baud... $85/$175
- Modem, External, 1200/2400 baud... $99/$195
- Teac 1.2 Mb/360K/720K floppy drive... $95/79/125
- Logictech mouse... $75
- Logictech mouse w/ PC Paint Brush... $109

SKYSCRAPER 12.5 MHz

IN TOWER CABINET LOOKS EXACTLY LIKE IBM PS/2 MODEL 60

- 1 Mb 80 ns RAM
- Uses ZyMOS POACH chip set
- 8/12.5 MHz, 0/1 wait switchable
- 1.2 Mb floppy drive
- Hard/floppy disk controller
- AT style keyboard
- Three 5.25" & two 3.5" device slots

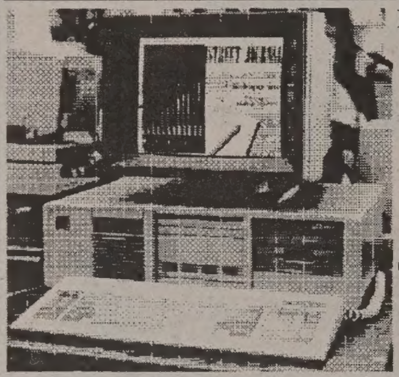
$1,295

HARD DISK SPECIALS!!!

- Seagate ST225/20 Mb/65 ms... $245
- Seagate ST238/30 Mb/65 ms/controller... $335
- Seagate ST251/40 Mb/38 ms... $425
- Seagate ST277R/70 Mb/38 ms... $495
- Miniscribe 3650/40 Mb/60 ms... $350

Installation Extra

U.S. MADE COMPUTER - OVERSEAS PRICE EVEREX SYSTEM 1800 - IBM AT COMPATIBLE



Basic System:
- 80286-8 , optional 6/8/10MHz
- 512K expandale to 1MB
- AT style keyboard
- Battery back clock/calendar
- ROM BIOS
- 8 expansion slots
- Five 1/2 height slots
- One year warranty

Options:
- 1.2 MB TEAC floppy drive
- Hard Disk/Floppy controller

W/ Options: $945

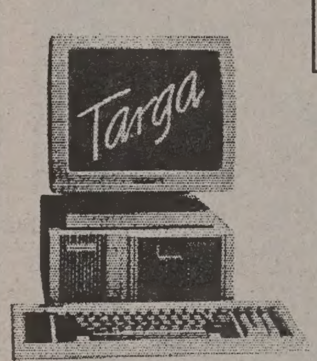
ONLY $725
Basic 8 MHz System

Our service centers offer 24-hour turnaround on most repairs.

Ask about our special Desktop Publishing package with free training.

We are the authorized dealers for PageMaker and Ventura

NEW TANDON TARGA
WITH 14" DUAL MODE MONITOR



- 80286 running at 6 or 8 MHz, software switchable
- 1 Mbyte RAM on board with memory mapper - compatible with Microsoft Windows and OS/2. 384K usable as EMS
- 1.2 Mbyte floppy drive
- 20/40 Mbyte hard disk drives
- Parallel/serial ports on motherboard
- Monochrome/color graphics support
- Five expansion slots
- DOS 3.2, GWBASIC, and Microsoft Windows
- 14" monochrome monitor
- One year nation-wide warranty

ONLY $1995
20MB Hard Disk System

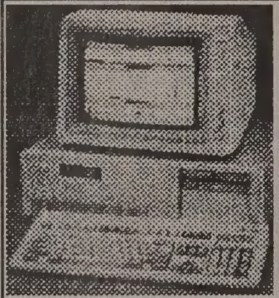
Made in U.S.A.

EVEREX 386 MODEL 3000A
100% COMPATIBLE WITH MS-DOS & XENIX

- 80386 8/16 MHz, 0/1 wait keyboard switchable
- 1 Mb 80 ns RAM, Norton SI rating 18.4
- 64k cache memory
- 1.2Mb Teac floppy drive
- Hard/floppy disk controller
- 8 expansion slots
- 5 half-height device slots
- AT keyboard

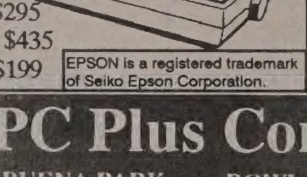
ONLY $1,795

10 MZ TURBO XT ONLY $695



- 4/10 MHz
- 640K RAM
- 2 floppy drives
- Mono/graphics/ printer adaptor
- Mono monitor
- AT style keyboard
- Key lock
- Front reset/turbo button
- 1 year warranty

EPSON® PRINTER SALE



LQ500..	$355	FX86e..	$295
LQ850..	$515	FX286e..	$435
EX1000..	$455	LX800..	$199

EPSON is a registered trademark of Seiko Epson Corporation.

WESTERN DIGITAL CORPORATION TOSHIBA Panasonic Office Automation CITIZEN NOVELL

PC Plus Corp.

MONTEREY PARK
710 E. GARVEY AVE.
Corner of Orange
(818)571-6955

BUENA PARK
7212 ORANGETHORPE AVE. #7A
East of Knott & Orangethorpe
(714)739-2158

ROWLAND HEIGHTS
18795 E. COLIMA RD.
East of Fullerton Rd.
(818)964-6308

- Prices subject to change without notice.
- Returns require authorization & maybe subject to 10% restocking charge
- 3% surcharge on credit cards
- Personal/company checks accepted
- COD/Shipping charges extra

MICROTIMES

Consumer Audit BPA

PUBLISHER/EDITOR
Dennis Erokan

CREATIVE

CREATIVE DIRECTOR Lee Ann Nelson
MANAGING EDITOR Mary Eisenhart
EDITORIAL ASSISTANT Robert Beauchamp
PRODUCTION MANAGER Doug Boone
ASSISTANT PRODUCTION MANAGER Sheryl Manchester
ASSISTANT ART DIRECTOR Michael P. Didier
PRODUCTION ASSISTANT Mary Beth DeSantis
ART STAFF David Cunha, Tim Levin, Lisa Lusk, Missy Mote, Heidi Sommer, Deborah Venezia
CAMERA OPERATOR John Moorehead
NEWS EDITOR Paul Hoffman
CONTRIBUTING EDITORS Robert D. Athey, Jr., Bennett Falk, Helmi Kobler, Matthew Leeds, Michael Markowitz, Ben Means, Jean Means, Brock Meeks, Ken Milburn, Jeff Spurrier, Birrell Walsh, Jim Wolcott, Wayne A. Yacco
CONTRIBUTING WRITERS Sue Albert, Lenny Bailes, David Batterson, Steve Guttman, David Hawkins, Woody Liswood, Nancy Mulvany, Aubrey Pilgrim, Sharon Rufener, Stephan Wickham
CONTRIBUTING PHOTOGRAPHERS Marc Franklin, Ken James, Michael Jay, Pat Johnson, Jim Marshall, Ann Summa
EDITORIAL CONSULTANTS Don Hamilton, Pat Hamilton
TYPESETTING Image Factory, The Typesetting Shop, Inc.

ADMINISTRATION

ASSOCIATE PUBLISHER Miles Hurwitz
ACCOUNTING MANAGER Linda Schenk
ASSISTANT ACCOUNTING MANAGER Lesley Hunter
ACCOUNTING Brian DeLuca, Patrick Emerson, Rosemary Galten, Carol Hunter, Brian Murray
PUBLISHER'S ASSISTANT Erica Stein
ADMINISTRATIVE ASSISTANTS Jef Brewer, Stephen Kearney, Jill Stauffer

ADVERTISING

ASSOCIATE PUBLISHER Joe Amadeo
ASSISTANT TO THE ASSOCIATE PUBLISHER Marianne P. Stone
ADVERTISING DIRECTOR Chuck Stanley
NATIONAL ACCOUNT DIRECTOR Bill Reefer
SC SALES MANAGER Reece A. Franklin
ADVERTISING & PROMOTION Susan R. Bower, Tina Gagliano, Barry Green, Lee Salem, Jane Shepherd
ADVERTISING ASSISTANTS Renèe Delucchi (San Francisco), Sally Engelfried (L.A.)
National Reps.: Carol Oppenheimer, John Lockhart

DISTRIBUTION

DISTRIBUTION MANAGER John Erokan
Art Holland, *Assistant Manager/LA*
DISTRIBUTION STAFF John Clefstad, Rand Crook, Roe Eyth, Danny Fernandez, Bruce A. Fraser, Frank Grygus, Eliot Kleinberg, Kirk Lanier, Trevor Loffs, Ron Lubben, Loren Ozaki, Jac Michanovic, Joseph Rafalo, Resource Dist., SDS, Bill Smith, Alan Spector; Racks by Free Distribution
MICROTIMES FOUNDERS Dennis Erokan, Don Hamilton, Pat Hamilton

This Vol. 5. No. 5, May 1988, Whole No. 43 MicroTimes, California's Computer Magazine, is published by BAM Publications, Inc., 5951 Canning St., Oakland, CA 94609. Phone (415) 652-3810. Los Angeles Office, 1800 N. Highland, Suite 220, Hollywood, CA 90028. Phone (213) 467-7878. San Jose Office, 36 Harold Ave., Suite 8, San Jose, CA 95117. Phone (408) 244-4400. Anaheim Office, 800 S. Brookhurst, Suite 1F, Anaheim, CA 92804. Phone (714) 776-2900. MicroTimes™ is © 1988 by BAM Publications, Inc. Subscriptions rate: 12 issues, U.S.: 3rd Class $24 (Allow 3 to 4 weeks for delivery), 1st Class $50 (Allow 1 to 2 weeks for delivery). MEXICO & CANADA: Surface Mail $40 (Allow 4 weeks for delivery), Air Mail $65 (Allow 1 week for delivery). OVERSEAS: Surface Mail $40 (Allow 6–10 weeks for delivery), Air Mail $160 (Allow 1 week for delivery). To receive sample issues, please send $2 ($4 for overseas) to cover postage costs. Back issues are $4 each. All rights reserved. Reproduction in whole or in part without permission of Publisher is strictly prohibited. Unsolicited material is gratefully accepted, but we can't be responsible for returning it unless it is accompanied by a stamped, self-addressed envelope. The staff and management of MicroTimes do not advocate or encourage the use of any product or service advertised herein for illegal purposes.

THE POWER AND PRICES YOU'VE BEEN LOOKING FOR-

Norton Rating 4.7

California's FASTEST XT AVAILABLE

with 30MB Hard Drive

$799

4.77 & 12 MHz

Phoenix BIOS • 256K RAM
150 Watt Power Supply
360K Floppy Drive
AT Style Keyboard
Hi-Res TTL Monitor

COLOR SYSTEM

$699

4.77 & 12 Mhz Motherboard
256K RAM • Phoenix BIOS
150 Watt Power Supply
360K Floppy Drive
Color Graphics Card
Color Tilt & Swivel Monitor
AT Style Keyboard

EGA SYSTEM

$1699

6 & 12 MHz — 0 & 1 Wait State
Phoenix BIOS
512K RAM
220 Watt Power Supply
1.2 MB or 360K Floppy Drive
EGA Card • AT I/O Card
30 MB Seagate Hard Drive
EGA Monitor w/Tilt & Swivel
Mouse w/Software
AT Style Keyboard

STAR PRINTERS

NEW NX-1000 8 N.L.Q. FONTS	**$209**
ND-10	**$319**
NX-15	**$319**
NR-15	**$455**
NB24-10	**$449**
NB24-15	**649**
NB-15	**$849**

EGA Card with Auto Switch	**$115**
Modem 300/1200 with Software	**$72**
MGP Card	**$ 39**
CGA Card	**$ 38**
Multi I/O Card	**$ 49**

CALL FOR ADDITIONAL PRODUCTS!!

- Products and Prices subject to availability May change without notice.
- Prices reflect cash discount only.
- Sale ends 6/30/88.
- Memory Cost Surcharge may be applied to all systems due to exchange rate variance.
- Schools, Corporations & Universities call for terms.

CALIFORNIA MicroStar

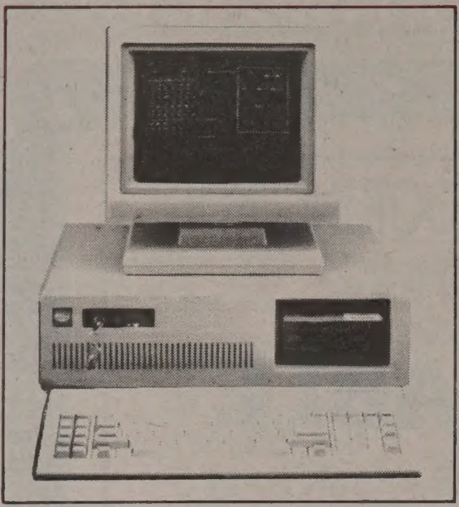
1583 ST. GERTRUDE PL.
SANTA ANA, CA 92705

VISA

(714) 641-8664

MasterCard

LEASING AVAILABLE



MORE & MORE POWER

CLONE MASTERS IBM PC/AT/XT COMPATIBLES

Business Hours Mon-Fri 10:00AM-8:00PM
Saturday 11:00AM-6:00PM

VISA MasterCard

Clone MASTERS®

ASK DEALER FOR

$1,000,000.00 for lease

70¢ PER DAY + 10% OPTION TO BUY

PC/XT TURBO SYSTEM

Includes:

- XT sliding case
- 4.77/8 MHz, 640K expandable
- 8 expansion slots
- 150 W power supply
- AT look alike keyboard
- Floppy disk controller card
- 360K floppy drive (Japan made)
- 256K memory on system board
- Fully assembled and tested

ONLY $~~469~~ NOW $349
Or $25.00/month

EXPRESS XT (12 MHz)

- New designer case
- 4.77/12 MHz XT System
- 150 Watt Power Supply
- Enhanced Keyboard—101 functional keys
- 1.2 MB Floppy (opt.)
- 3.5'' Floppy (opt.)
- 360K Floppy
- 20MB Hard Disk w/controller
- Hi resolution monitor RGB (640-200)
- Color Graphic Adaptive
- 512K RAM installed
- Serial Parallel Port
- Clock Calendar Battery Backup
- Fully assembled & tested

$1299
Or $55.00/month

PC/AT TURBO SYSTEM

Includes:

- AT sliding computer case
- 6/12 MHz, 1 MB expandable
- 8 expansion slots, CMOS clock/calendar
- 200 W power supply
- AT style keyboard
- AT FDD & HDD controller
- 1.2 MB floppy drive (Japan made)
- 512K memory on system board
- Fully assembled and tested

ONLY $~~1449~~ NOW $869
Or $43.00/month

WE'RE DISTRIBUTED FROM

LOGITECH

SPECIALS ON SALE

• Logitech serial mouse	$69.00
• AT deluxe case (5 drives)	$59.00
• AT jr. flip top & 150W P/S	$69.00
• 230W P/S (AT-386)	$61.00
• 1.2MB controller AT	$49.00
• Seagate 4026	$249.00
• Thompson EGA Multiscan	$420.00
• Multi display card	$69.00
• 15'' dual screen monitor	$89.00
• NX-1000 printer	$199.00
• NP-10 printer	$149.00

AT-386 M BOARD

- True 32 bit Intel 80386
- Support 4 MB of 32 BIR system board memory
- 3 times faster 80286
- Socket 80287—80387
- 1 MB installed

$1290

AT-286 40 MB EGA SYSTEM

- AT deluxe case w/LED & reset
- 6-10 MHz 0 wait state M board
- 80286/10 M processor
- DTK latest version BIOS
- 640 KB memory installed
- 200W 110/220V power supply
- CMOS clock calendar
- AT FDD & HDD WA2 controller
- 1-2 MB floppy drive (Japan made)
- 40 MB hard disk
- EGA auto switch card
- EGA monitor (640 x 350 res)
- AT enhanced keyboard
- Fully assembled & tested

One year parts & labor warranty

$1790

We are. . . CLONE MASTERS

Coming soon: AT 286-20 MHz. We're leading in technology.

HAWTHORNE OFFICE
4547 W. ROSECRANS AVE.
HAWTHORNE, CA 90250
(213) 675-5303

ANAHEIM OFFICE
1027 N. MAGNOLIA
ANAHEIM, CA 92801
(714) 220-9500

CANOGA PARK OFFICE
20638 SCHOENBORN ST.
CANOGA PARK, CA 91306
(818) 718-9478

EL CAJON OFFICE
P.O. BOX 12046
EL CAJON, CA 92020
(619) 447-1412

CANOGA PARK OFFICE
8011 OAKDALE AVE.
CANOGA PARK, CA 91306
(818) 709-0206

BREA OFFICE
417 ASSOCIATE RD., SUITE A-255
BREA, CA 92621
(714) 493-6629

NORCO OFFICE
2429 HAMMER AVE.
NORCO, CA 91760
(714) 736-9601

HUENEME OFFICE
444 EAST CLARA PORT
HUENEME, CA 93041
(805) 986-3906

DAO/GATETRONIC
1015½ WEST 190TH ST.
GARDENA, CA 90248
(213) 715-6086

SAN JOSE OFFICE
900 S. WINCHESTER, SUITE 12
SAN JOSE, CA 95128
(408) 296-9333

LONG BEACH OFFICE
1234 SOUTH ST.
LONG BEACH, CA 90806
(213) 422-4444

SAN DIEGO OFFICE
6061 MISSION GORGE RD.
SAN DIEGO, CA 92120
(619) 282-8006

ANAHEIM OFFICE
720 S. EUCLID # 03
ANAHEIM, CA 92802
(714) 635-1337

VISALIA OFFICE
3320 E. MINERAL KING #F
VISALIA, CA 93291
(209) 627-6761

BURBANK OFFICE
337 N. KEYSTONE
BURBANK, CA 91506
(818) 955-9431

DAO Computer INC.
MANUFACTURE-DISTRIBUTOR-WHOLESALE
12810 NUTWOOD AVE., GARDEN GROVE, CA 92640

714-539-2167
FAX—(714) 539-2199

CALENDAR OF EVENTS

SPONSORED BY SMART AND FRIENDLY

March 28 – 30 Laser Optical Disk Seminar. Technology Transfer Institute, Santa Monica. Call (213) 394-8305 for more information.

March 28 – 31 World Congress On Computing. McCormick Place, Chicago, IL. Contact The Interface Group, 300 First Ave., Needham, MA 02194. (617) 449-6600.

March 28 – 31 Interface '88. McCormick Place, Chicago, IL. Contact The Interface Group, 300 First Ave., Needham, MA 02194. (617) 449-6600.

March 29 – 31 Electronic Imaging West '88. Anaheim Hilton, Anaheim. Contact MG Expositions Group (800) 223-7126.

April 2 Computer Swap Meet. Orange County Fairgrounds, Costa Mesa. Call RK Productions at (800) 252-7927 for information.

April 2 San Diego Computer Show. Scottish Rite Center. Contact Golden Gate Shows (415) 388-8893.

April 5 – 8 High Performance Computer Architecture: Supercomputers and Alternative Systems. Computer Science Short Course. UCLA Extension (213) 825-1047.

April 7 – 9 Lotus 1-2-3 Intensive 3-Day Seminar. Los Angeles. Contact The Right Way Computer Training (213) 215-1061.

April 9 Computer Swap Meet. San Diego County Fairgrounds, Del Mar. Call RK Productions at (800) 252-7927 for information.

April 9 Coastline Community College Computer Seminars Begin. Huntington Beach, Newport Beach, Costa Mesa. Call (714) 241-6186.

April 16 Pasadena Computer Swap. Pasadena Center. Miroshows (800) 433-7469.

April 21 – 22 Desktop Publishing Seminar. San Diego. Contact the Association For Systems Management (ASM) at (216) 243-6900.

April 21 – 22 Troubleshooting And Maintaining IBM PC, XT, AT, PS/2 And Compatibles Seminar. San Diego. Contact Data-Tech Institute (201) 478-5400.

April 21 – 33 dBASE III+ Intensive 3-Day Seminar. Los Angeles. Contact The Right Way Computer Training (213) 215-1061.

Smart and *Friendly*

April 23 Computer Swap Meet. Los Angeles County Fairgrounds, Pomona. Call RK Productions at (800) 252-7927 for information.

April 25 – 29 Advanced Topics In Artificial Intelligence. Computer Science Short Course. UCLA Extension (213) 825-1047.

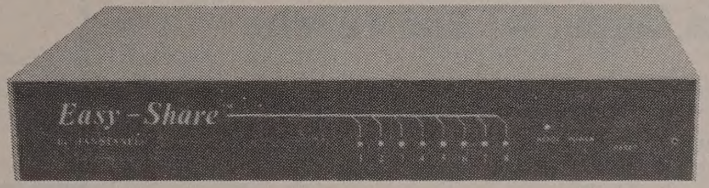
April 30 San Fernando Valley Computer Swap. California State University, Northridge, North Campus. Contact Microshows (800) 433-7469.

May 5 – 7 Computer Networks Intensive 3-Day Seminar. Los Angeles. Contact The Right Way Computer Training (213) 215-1061.

May 5 – 7 WordPerfect Intensive 3-Day Seminar. Los Angeles. Contact The Right Way Computer Training (213) 215-1061.

May 9 – 12 COMDEX. World Congress Center, Atlanta, GA. Contact The Interface Group, 300 First Ave., Needham, MA 02194. (617) 449-6600.

It's Easy To Share

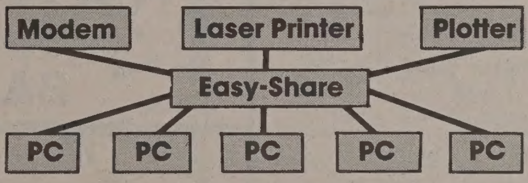


2 Year Warranty

Easy-Share
The Peripheral Sharing Solution

Now you can quickly and easily share your printers, plotters and modems with your computers. Easy-Share automatically buffers and routes your data to the desired output device, eliminating cable or diskette swapping and manual switchboxes.

Easy-Share doesn't require any special software to operate. It easily connects to your computer's serial or parallel ports and is compatible with all of your application software.



- Share up to 8 PCs and peripherals with Easy-Share

Easy-Share Gives You:

Easy Configuration
You can configure each port as "input" or "output"–allowing you to connect 7 computers to 1 printer, 6 computers to 2 printers, or any combination of up to 8 ports. And each port can be configured independently for Parity, Wordlength, Baud Rate, Input/Output operation as well as for "handshake" method (DTR/XON).

Easy Operation
Easy-Share automatically transfers data and performs any required switching. There are NO OPERATOR CONTROLS or switches to set. And, any or all "on-line" users can send documents at the same time. Buffer space is automatically allocated to insure maximum efficiency.

Easy Expansion
Easy-Share has 4 serial ports standard, and is expandable up to 8 ports. Plug-in interface cards allow for serial or parallel expansion. Plus, Easy-Share comes standard with 256K of RAM and is expandable to 1 megabyte of internal onboard RAM!

PLUS THESE OTHER FEATURES, FREE!

Bi-Directional Mode
Easy-Share supports a special bi-directional mode allowing the use of Modems, Plotters, or even the exchange of files between computers (requires user provided file exchange program).

Advanced Software Command Support
Easy-Share supports advanced software commands, including: Number Of Copies, Pause For Paper Change, Printer Select, Bi-Directional Modem Support, No Timeout (for Accounting Audit Trail Use), and others.

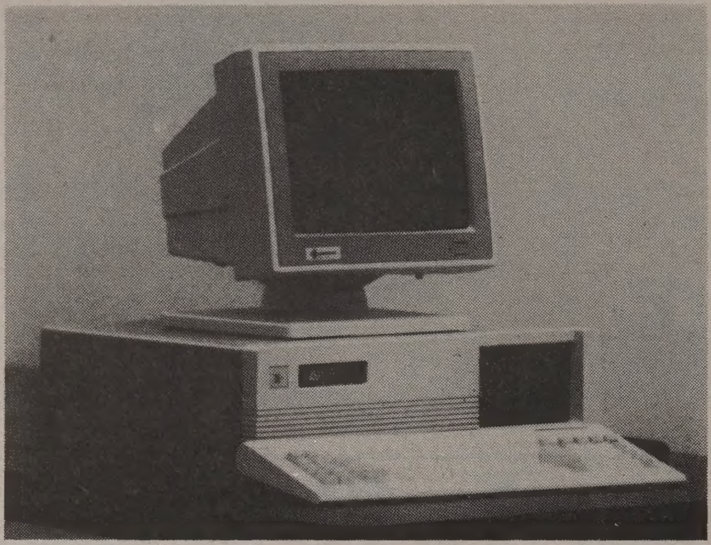
CALL TODAY AND SEE why companies like–Amdahl, World Savings, and Barnes-Hind Pharmaceuticals–have made Easy-Share their peripheral sharing solution.

FIND OUT HOW EASY (and inexpensive) it can be to share your peripherals in your own company with Easy-Share!

CALL NOW
(408) 748-9330

TANSTAAFL
Manufacturing, Inc.
1800 Wyatt Drive, Suite 6
Santa Clara, CA 95054
(408) 748-9330

HIGH TECHNOLOGY BASIC COMPUTER SYSTEMS



Sigma Model AT 286 12 Mhz

- Intel^{TM} 80286 Running at 6 - 12 Mhz 0 Wait.
- 8 Expansion Slots (6-16 bit, 2-8 bit).
- 80287 Floating-Point Math Coprocessor Socket.
- 512 Kbytes RAM "On-Board".
- 230 Watt, Switching, Solid State, Power Supply.
- 1.2 Mbyte Floppy Disk Drive.
- Dual FD/HD Controller Board.
- I/O Board with Serial, Parallel & Game Ports
- Enhanced AT Style (101-key) Keyboard.
- AT Style (slide-open) Steel Case.
- Hercules^{TM} compatible Monochrome Video Board with RS-232 Printer Port.
- TTL Amber Monitor with Swivel/Tilt Base.
- Real Time Clock/Calendar with Battery Backup.
- AT 286 12 Mhz Users Manual.

BASE SYSTEM $985
16 MHZ BASE SYSTEM $1,385

UPGRADE OPTIONS

- Upgrade to 640 Kbytes RAM - $85
- Upgrade from Monochrome to (CGA) Color - $199
- Upgrade from Monochrome to (EGA) Color - $399
- Additional 360 Kbyte Floppy Disk Drive - $75
- Additional 1.2 Mbyte Floppy Disk Drive - $95
- Additional 720 Kbyte (3.5) Floppy Disk Drive - $115
- Enhanced AT Style (101-key) Keyboard - $55
- Panasonic Model 1091ⅡDot Matrix Printer - $199
- Seagate ST-251 40 Mbyte Hard Disk Drive - $439
- Seagate ST-225 20 Mbyte Hard Disk Drive - $279
- 300/1200/2400 Baud Communications Modem - $145

NOTE: "Other" option item are available.

SIGMA COMPUTERS OFFER

- High Technology System Integration at our plant in Stanton, Calif.
- 48-hour "Burn In" and Testing of all Systems produced.
- 1 full year Limited Warranty on all Systems excluding FD/HD drives.
- Expert Technical Support.

FREE SURGE PROTECTOR WITH PURCHASE OF ANY COMPUTER SYSTEM

This Advertisement was typeset by Sigma Computers using PcTeX Ver. 1.05f, DVILASER/PS by Arbortext and printed using an AST Turbolaser/PS printer.

Sigma Model XT-88 Turbo 10 Mhz

- Intel^{TM} 8088 Running at 4.77 - 10 Mhz 0 Wait.
- 8 Expansion Slots (8-bit).
- 8087 Floating-Point Math Coprocessor Socket.
- 512 Kbytes RAM "On-Board".
- 150 Watt, Solid State, Power Supply.
- 1 - 360 Kyte Floppy Disk Drive.
- Floppy Disk Controller Board.
- I/O Board with Serial, Parallel & Game Ports
- AT Style (84-key) Keyboard.
- AT Style (slide-open) Steel Case.
- Hercules^{TM} compatible Monochrome Video Board with RS-232 Printer Port.
- TTL Amber Monitor with Swivel/Tilt Base.
- Real Time Clock/Calendar with Battery Backup.
- XT 88 Turbo Users Manual.

BASE SYSTEM $615
12 MHZ BASE SYSTEM $695

Sigma Model AT 386/2 16 Mhz

- Intel^{TM} 80386 Running at 16 Mhz 0 Wait.
- Latest Version Phoenix^{TM} Bios.
- 8 Expansion Slots (2-32 bit, 4-16 bit, 2-8 bit).
- 80287 & 80387 Floating-Point Math Coprocessor Sockets.
- 1.0 Mbytes (80 Nsec) RAM "On-Board".
- 230 Watt, Switching, Solid State, Power Supply.
- 1.2 Mbyte Floppy Disk Drive.
- 40 Mbyte ST-251 Seagate Hard Disk.
- Dual FD/HD Controller Board.
- I/O Board with Serial, Parallel & Game Ports
- Enhanced AT Style (101-key) Keyboard.
- AT Style (slide-open) Steel Case.
- Hercules^{TM} compatible Monochrome Video Board with RS-232 Printer Port.
- TTL Amber Monitor with Swivel/Tilt Base.
- Real Time Clock/Calendar with Battery Backup.
- AT 386/2 16 Mhz Users Manual.

BASE SYSTEM $2,475

PLEASE NOTE

- Call (714) 893-0609 for Volume Discounts.
- Corporate, Government & Institutional P.O.'s Welcome.
- System Leasing Programs are available.
- VISA & MASTER CARD Accepted (Add 3% Handling Charge)
- Dealer and Consultant Inquiries welcome.

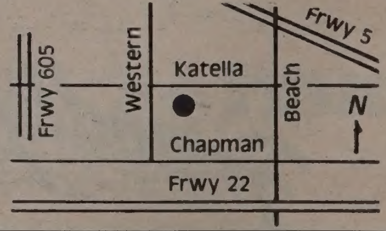
NOTE: Prices are subject to change without notice.

PERSONAL COMPUTER

HOURS
Mon - Fri 9-6
Sat 10-5

SIGMA COMPUTERS

7540 Katella Ave., Stanton, Calif 92680
TEL (714) 893-0609 or FAX 893-0530



May 10 – 13 The Application Of Fault Tolerance Technology. Computer Science Short Course. UCLA Extension (213) 825-1047.

May 13 – 14 Computer-Using Educators (CUE) Spring Conference, San Diego. Contact CUE at (415) 328-2248 or (818) 355-8807.

May 14 Computer Swap Meet. Orange County Fairgrounds, Costa Mesa. Call RK Productions at (800) 252-7927 for information.

May 19 – 21 Xerox Ventura Publisher Intensive 3-Day Seminar. Los Angeles. Contact The Right Way Computer Training (213) 215-1061.

May 21 Computer Swap Meet. Los Angeles County Fairgrounds, Pomona. Call RK Productions at (800) 252-7927 for information.

May 31 – June 3 National Computer Exposition/Conference. Los Angeles Convention Center. Contact NCE/NCC '88, Suite 500, Chicago, IL. (312) 222-0198.

June 7 – 9 Distributed Data Base Systems. Computer Science Short Course. UCLA Extension (213) 825-1047.

June 12 – 15 25th Annual Design Automation Conference. Anaheim Convention Center. Contact MP Associates. (303) 530-4333.

June 13 – 15 The Design And Analysis Of Reusable Software. Computer Science Short Course. UCLA Extension (213) 825-1047.

June 16 – 18 DOS Hard Disk Management Intensive 3-Day Seminar. Los Angeles. Contact The Right Way Computer Training (213) 215-1061.

June 18 Computer Swap Meet. Los Angeles County Fairgrounds, Pomona. Call RK Productions at (800) 252-7927 for information.

July 16 Computer Swap Meet. Los Angeles County Fairgrounds, Pomona. Call RK Productions at (800) 252-7927 for information.

August 20 Computer Swap Meet. Orange County Fairgrounds, Costa Mesa. Call RK Productions at (800) 252-7927 for information.

August 27 Computer Swap Meet. Los Angeles County Fairgrounds, Pomona. Call RK Productions at (800) 252-7927 for information.

---

*As a community service, **MicroTimes** lists trade shows, seminars, and other special events in the Calendar of Events free of charge on a space-available basis. To improve the likelihood of your listing's timely inclusion, please make sure we have the necessary information no later than the first of the month, two months before the cover date of the issue in which you'd like it to appear (i.e. the deadline for the March issue, distributed during February, is January 1). Send to: MicroTimes Calendar of Events, 5951 Canning St., Oakland, CA 94609.*

News about user group meetings and other regularly scheduled activities should be sent to User Group Network at the same address.

SUBSCRIBE

TO MICROTIMES

Send Me The Next 12 Issues For $24
In Mexico & Canada $40
Overseas (surface mail) $ 40

☐ Cash Enclosed
☐ Charge Card

Send
☐ Bay Area Edition
☐ L.A. Edition

Visa/ Mastercard ____________

Expires ____________

Signature ____________

Card Address ____________

Name (please print) ____________

Company Name ____________

City ____________

State ____________ Zip ____________

Mail to:
MicroTimes Subscritpions
1800 N. Highland #220
Hollywood, CA 90028

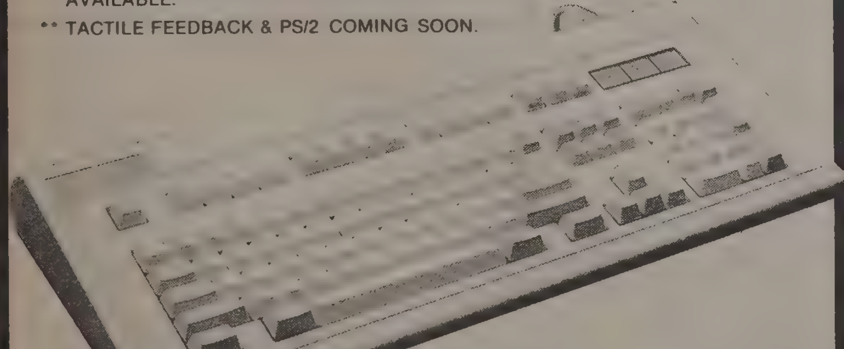
CKB

KEYBOARDS

Outstanding Quality at Unbeatable Prices

FACTORY DIRECT

- HIGH RELIABILITY CAPACITIVE KEYSWITCHES WITH JAPANESE KEYPADS.
- DOUBLE INJECTION MOLDED STANDARD KEYS.
- NEW PERMA-COAT PROTECTIVE LAYER GIVES A LIFETIME IN EXCESS OF 50 MILLION KEYSTROKES.
- FOURTEEN DIFFERENT LANGUAGE VERSIONS AVAILABLE.
- TACTILE FEEDBACK & PS/2 COMING SOON.



QUALITY COMPUTER PRODUCTS INC.
25029 VIKING ST., HAYWARD, CA 94545
TEL: (415) 785-4225 FAX: (415) 786-0209

MicroCom Systems

OUTSTANDING SOFTWARE

For IBM PC's and Compatibles

$3.50 PER DISK SMALL QUANTITIES

$3.00 PER DISK FOR TEN OR MORE

$1 OFF 5 DISKS OR MORE WITH THIS COUPON

- ☐ **BUSINESS 1**—EZ-Forms business form generation
- ☐ **CAD 1**—Altamira, 4 color object oriented drawing prog.★
- ☐ **COMM 3**—Compression and archival utilities.
- [5] **COMM 4a,b,c,d,e**—(5 disks) RBBS Bulletin Board System 14.1D.
- [2] **DATABASE 1a,b**—(2 disks) The File Express menu driven general purpose database.
- ☐ **DATABASE 3**—The pBASE relational database.
- ☐ **EDUCATION 1**—Interactive DOS tutorial for new PC users. Makes learning DOS painless.
- [2] **FINANCE 1a,b**—(2 disks) PC Accountant 2.0 personal bookkeepping/finance management.
- ☐ **GAMES 1**—3-D PacMan, Kong, SpaceWar, JanitJoe.★
- ☐ **GAMES 2**—Qubert, Pango, Centipede, Monopoly.★
- ☐ **GAMES 3**—Blackjack, Arm Chair QB, and Empire.
- ☐ **GAMES 4**—Castle, StarTrek, and the original Adventure.
- ☐ **GAMES 5**—The Hack adventure game from the universities. Like Rogue, only more complex.
- ☐ **GAMES 6**—Pinball, Othello, Sopwith (fly one).★
- [2] **INFO 1a,b**—(2 disks) Cooking recipes database with keyword/ingredient retrieval prog. Add your own recipes.
- ☐ **LANGUAGE 5**—Turbo Pascal interactive debugger, pop-up help, formatters, et cetera.
- ☐ **LANGUAGE 7**—Complete Pascal interpreter, compiler, and debugger. Great for learning Pascal!
- ☐ **LANGUAGE 8**—Xlisp 1.7, the standard for AI langs
- ☐ **MUSIC 1**—Many clever tunes, and an excellent color graphics music editor.
- [2] **MUSIC 2a,b**—(2 disks) PianoMan 3.0 polyphonic music recording and playback program.
- ☐ **ORGANIZER 1**—DeskMate, a Sidekick clone, and the Judy calendar program.
- ☐ **ORGANIZER 3**—The PC-Outline Resident windowing outline editor/thought organizer.
- ☐ **PICTURES 2**—High res. digitized pictures. Graphics req'd.
- ☐ **PINUP 2**—Provocative high res. pinups. Graphics req'd
- ☐ **PRINTER 1**—Font & sideways utils, spooler, banner mkr.
- ☐ **UTILITIES 1**—A collection of invaluable DOS utilities
- ☐ **UTILITIES 2**—More invaluable DOS utilities. Too many to list here!
- ☐ **UTILITIES 3**—Complete set of debugging and diagnostic utilities.

NEW RELEASES/UPDATES

- [2] **CAD 2a,b**—(2 disks) Advanced 2D/3D drafting program. 640k.★
- ☐ **CAD 3**—The PC-Flow, flowchart creation program.★
- [2] **COMM 1a,b**—(2 disks) Version 2.4 of the ever-popular Qmodem.
- [2] **COMM 2a,b**—(2 disks) Procomm 2.42, an excellent modem program with terminal emulation.
- ☐ **EDUCATION 2**—Learn the Presidents, States (and capitals) and the periodic table.★
- ☐ **EDUCATION 5**—Learn Origami, the Japanese art of paper folding, with step by step animated instructions.★
- ☐ **EDUCATION 7**—Learn Basic with this interactive Basic tutorial.
- [2] **FINANCES 3a,b**—(2 disks) Express Calc 3.12, a powerful spreadsheet program.
- ☐ **GAMES 8**—The Striker helicopter attack game, and Risk, the game of world domination.★
- ☐ **GAMES 9**—EGARisk, world domination in very high res. EGA required.
- ☐ **GAMES 10**—Solitaire, Golfing, and Sailing in the Bermuda triangle.★
- ☐ **GAMES 12**—Chess, Backgammon, and Wheel of Fortune. Graphics not required.
- ☐ **GRAPHICS 1**—Record and play back screen images! Excellent for demo creation, training, etc.★
- ☐ **HUMOR 1**—Practical, impractical & other jokes.
- [2] **INFO 2a,b**—(2 disks) Zip-Phone, national areacode/prefix to zip-code cross ref. A must for businesses.
- ☐ **LANGUAGE 1**—PDProlog 1.91a, an advanced language for artificial intelligence applications.
- [2] **LANGUAGE 3a,b**—(2 disks) The A86 2.18 macro assembler and debugger. A complete assembly development system.
- ☐ **LANGUAGE 10**—Augusta, a subset of the Department of Defenses' new programming language ADA
- [2] **LANGUAGE 11a,b**—(2 disks) Forth-83 2.1 4th generation programming language.
- ☐ **SHELL 4**—Automenu customizable menu facility, and the HDM II 4.04 hard disk menuing system.
- ☐ **UTILITIES 5**—Utilities for formatting, parking, and optimizing hard disk drives.
- ☐ **UTILITIES 6**—Advanced utilitiess including Dpath, Esc, Hotdos, Pushdir and Popdir. Resident program utilities and more.
- ☐ **UTILITIES 7**—More Advanced utilities including MasterKey (undeletes files from hard disks), Killdir
- [2] **WORD 1a,b**—(2 disks) PC Write 2.71, a powerful word processing system, with built in spell checker

MT-5/88

★Disks so marked require color graphics.

Cost of Disks ____________
CA Res Sales Tax ____________
Ship/Handling $1.00
Total Enclosed ____________

MicroCom Systems
3673 Enochs Street, Santa Clara, CA 95051
(408) 737-9000
M-F 7 am-9 pm, Sat-Sun 8 am-5 pm

By Paul Hoffman

Look And Feel Continued

Paperback Software is in the strange position of being sued and not being able to get the suing party to define what the suit is about.

According to a motion recently filed by Paperback Software, Lotus President Jim Manzi refused to tell Paperback what it was being sued for. The motion, now before United States Magistrate Joyce L. Alexander, states that during deposition, not only did Lotus' lawyers prevent Mr. Manzi from giving answers, "Mr. Manzi also gave evasive or incomplete answers to a large number of questions." Lotus' lawyers did not return calls at press time. Lotus originally sued Paperback for infringement of copyright in the first major "look and feel" case.

Paperback's main argument is that Lotus has made unsubstantiated claims that Paperback may have used Lotus' source code in its *VP Planner* program and that this caused Lotus significant financial harm. Although Lotus has made these claims in many motions in the case, Manzi refused to answer any questions concerning why Lotus believes this. During the deposition, Manzi would not answer questions such as "Did anyone at Lotus Development Corporation attempt to disassemble the *VP Planner* object code module on the diskettes in its released form?" and "Is Lotus or is Lotus not charging Paperback Software with copying the source code?" Even on simple questions such as "Does Lotus claim it's the only one that can use ACOS for arc sine," Manzi gave nonresponsive or evasive answers, according to Paperback's motion.

Paperback is in the strange position of being sued and not being able to get the suing party to define what the suit is about. Part of this is due to poor luck of the draw: the federal judge originally assigned to the case has been completely tied up with another major federal trial, namely the fraud case against Lyndon LaRouche. That case has taken much longer than expected. A few months ago, Judge Robert E. Keeton assigned the numerous pre-trial motions in Lotus' suit against both Paperback and Mosaic (the manufacturer of *Twin*) to United States Magistrate Joyce L. Alexander. Lotus objected to the movement of the motions to the magistrate, causing many lawyers to assume that Lotus was trying to drag out the case. The deposition indicates that this might be exactly what Lotus is trying to do.

According to papers filed with the motion, it took almost a year for Paperback to get to ask Manzi questions about the case. It needed to ask five times and ask the court to compel Manzi to give the deposition. Approximately one quarter of the transcript of the deposition is Lotus lawyers instructing Manzi not to answer or arguing about the questions. Lotus' lawyers prevented Manzi from answering questions about why Lotus thought Paperback was violating Lotus' copyright due to lawyer-client privilege. Manzi would not give information about how much Lotus thought it had lost due to Paperback's sales, even though it is claiming damages in their suit.

Apple Sues Microsoft Over Look And Feel Of Windows 2

In a move certain to have a profound effect on the microcomputer industry, Apple Computer has filed a suit against Microsoft, claiming that *Windows 2* infringes on Apple's copyright on the look and feel of Macintosh screens. Apple also sued Hewlett-Packard for its *New Wave* operating environment, which is based on *Windows 2*. The suit may have the effect of delaying the release of the OS/2 Presentation Manager until some of the issues in the case are settled, or at least until Microsoft feels secure in its legal position in the case. The case came as a surprise both to the computer

AGREEMENT

This Agreement is entered into on this 22nd day of November, 1985, by and between Apple Computer, Inc., a California corporation having its place of business at 20525 Mariani Avenue, Cupertino, California 95014 (hereinafter "Apple") and Microsoft Corporation, having its place of business at 10700 Northup Way, Bellevue, Washington 98008 (hereinafter "Microsoft").

The parties have a long history of cooperation and trust and wish to maintain that mutually beneficial relationship. However, a dispute has arisen concerning the ownership of and possible copyright infringement as to certain visual displays generated by several Microsoft software products. These products are Microsoft's operating environment program, "Microsoft® (Windows Version 1.0," the three Microsoft applications programs developed under the January 22, 1982 agreement between Microsoft and Apple for use on Apple's Macintosh Computers: an electronic spread sheet program ("Microsoft® Multiplan®"), a business graphics program ("Microsoft® Chart") and a database program ("Microsoft® File"), and two other Microsoft application programs: an integrated electronic spread sheet program ("Microsoft® Excel") and a word processing program ("Microsoft® Word"). By means of this Agreement the parties intend to resolve the dispute and each acknowledges that the valuable consideration underlying this Agreement consists of the resolution of the dispute and the several undertakings and accommodations of the respective parties described below. Accordingly, the parties agree as follows.

1. Acknowledgement. For purposes of resolving this dispute and in consideration of the license grant from Apple described in section 2 below, Microsoft acknowledges that the visual displays in the above-listed Microsoft programs are derivative works of the visual displays generated by Apple's Lisa and Macintosh graphic user interface programs.

2. Visual Copyright License from Apple.

A. Grant. Apple hereby grants to Microsoft a nonexclusive, worldwide, royalty-free, perpetual, nontransferable license to use those derivative works in present and future software programs and to license them to and through third parties for use in their software programs. This license shall not include new software programs written by Microsoft which are similar in function to Microsoft® Excel and are offered for license to the public prior to October 1, 1986. As a condition to this license, Microsoft shall cause its visual copyright notice to appear in its products which use visual displays licensed hereunder.

B. Warranty. Apple hereby warrants that neither Apple nor any of its agents, representatives or attorneys knows of any patent, copyright, trade secret or any other right or claim of or by any third party to these licensed visual copyrights in the Lisa and Macintosh graphic user interface programs. Each party shall notify the other promptly of any such claim and will cooperate fully in the defense of such a claim. Apple shall indemnify and hold Microsoft harmless from any such claim of which it had such knowledge and any damages and reasonable expenses arising therefrom.

3. Patent License from Apple.

A. Grant. Apple hereby grants to Microsoft a nonexclusive, worldwide, royalty-free, nontransferable license to make, use and sell the inventions described and claimed in claims 9, 11, 12 and 13 of United States Patent No. 4,464,652 for the life of the patent. Microsoft in turn may license these rights to and through third parties for use in their software programs and hardware products. Microsoft is not required to cause any patent marking to appear in its products which use any such inventions.

B. Warranty. Apple hereby warrants that it owns the patent and to the best of its knowledge there are no claims asserted by any third party to the inventions described in the claims.

4. Release. Apple hereby waives any other copyright, patent, trade secret or other claim or right it may have as to Microsoft® Windows Version 1.0.

5. Visual Copyright License from Microsoft. Microsoft hereby grants to Apple a nonexclusive, worldwide, royalty-free, perpetual, nontransferable license to use any new visual displays created by Microsoft during a period of five years from the date of this agreement as part of its Microsoft® Windows retail software product in software programs and to license them to and through third parties for use in their software programs. As a condition to this license, Apple shall cause its visual copyright notice to appear in its products which use such Microsoft visual displays.

6. Revision of Microsoft® Word. Microsoft shall revise Microsoft® Word which operates on the Apple Macintosh computer by enhancing and improving the program as specified in Exhibit A to this Agreement. Microsoft shall use its best efforts to complete the revision by July 31, 1986.

7. General Provisions.

A. Confidentiality. The parties shall keep the terms and conditions of this Agreement in strict confidence, except that each party may state that it has entered into an agreement with the other concerning visual copyrights.

B. Representations. The parties represent that each is free to enter into this Agreement and is not and will not become a party to any agreement inconsistent or in conflict with any of the terms or conditions of this agreement.

C. Breach and Termination. If a breach of this Agreement by either party continues more than 30 days from the date of written notice of such breach by the non-breaching party, that party may terminate the Agreement by giving written notice to the other. Waiver by a non-breaching party of any breach by the other shall not be deemed to be a waiver of any other or subsequent breach. The rights of the parties under this clause are in addition to any other rights or remedies provided by law or under this Agreement.

D. Notices. Any notice required under this Agreement shall be given by first class mail, postage prepaid, with return receipt requested.

E. Assignment. Except in the case of the sale of substantially all of the assets or controlling stock, this Agreement may not be assigned, nor the rights granted hereunder (other than the sublicensing rights contained in paragraph 2) transferred by either party without the prior written consent of the other party.

F. Independent Contractor. This Agreement shall not be construed as creating an agency, partnership or joint venture between the parties.

G. Entire Agreement. This Agreement constitutes the entire agreement between the parties with respect to the subject matter treated herein. This Agreement shall not be amended except by a written agreement signed by both parties.

H. Binding Effect. Subject to the limitations expressed above, this Agreement will inure to the benefit of and be binding upon the parties and their successors in interest.

Paul Hoffman is a freelance writer who has written five books about computers.

IBM Software for $3.49

Thousands of IBM/Compatible Public Domain and Shareware Programs Are Available from the Micro Star Library, and Priced at **Only $3.49**

ORDER TODAY on our Toll Free Phone Lines

ORDERS SHIPPED OUT SAME OR NEXT DAY

GAMES

JET SET FLIGHT SIMULATOR (102) Be a jet pilot at the controls.

GLOBAL THERMAL NUCLEAR WAR (105) Frightening possibilities.

ARCADE GAMES (106) Has Kong, a 3-D Pacman, Bricks, Pango. (Requires color.)

BASIC GAMES (107) Pacman, Lunar Lander, Startrek, Meteor, Breakout, and others.

CARD GAMES (109) Canasta, hearts, draw poker & bridge.

STRIKER (110) Defender-like game. "Top Gun" in space.

FLIGHTMARE (112) Futuristic fighter pilot game. (Requires color graphics adapter.)

SLEUTH (117) Who done it?

MONOPOLY WITH GRAPHICS (118) Color or monochrome.

DUNGEONS AND DRAGONS (119)

GAMES IN BASIC (124) Lander, biorhythms, desert, Phoenix, Star Wars, others.

TRIVIA GAME (130-131) (2 disks) Extensive trivia game.

PROFESSIONAL BLACK JACK (148) Become a pro.

QUEST (152) Role playing adventure fantasy game. (Requires color.)

PINBALL (153) Many games. Also includes a great maze game.

BRIDGE PAL (171) Complete game of contract bridge, with tutorial.

FENIX (193) Just like the famous arcade game.

SPANISH HANGMAN (196) Fun way to learn Spanish.

BONZOWARE (199) Multi-faceted entertainment for adults only.

KID-GAMES (GAM 8) Animals math, clock game, alphabet, etc.

3-D CHESS (GAM9) Incredible. 2D and 3D. Many levels. Play back moves, store games.

WIZARD'S LAIR (GAM14, GAM15) (2 disks) Like Dungeons & Dragons, w/maps, sorcery, etc.

EDUCATION

FUNNELS AND BUCKETS (201) A fun way to learn basic math.

MATHPAK (202) Tutorial with lessons in higher mathematics.

PC-TOUCH (204) Typing tutorial.

EZ-SPELL (206) Checks spelling.

EDUCATIONAL PROGRAMS (207) Preschool and elementary.

BASIC TUTORIAL (208) Learn programming with BASIC.

BEGINNING SPANISH (211) Tutorial

BIBLEQ (214) The Bible with this question-answer tutorial.

SPANISH II (232) Sequel to #211.

AMY'S FIRST PRIMER (248) Teaches alphabet, numbers, shapes, colors, counting, etc.

MUSIC

PIANOMAN 3.2 (301) Turn your keyboard into a piano. Fun!

PC-MUSICIAN (302) Compose, save, and play music.

WORD PROCESSING

PC-WRITE 2.71 (401-402) (2 disks) Latest version of this popular program w/spelling checker.

NEW YORK WORD (403-404) (2 disks) Powerful split screen editing, mail merge, etc.

LETTER WRITER (405) The easy way to write letters! Popular.

PC-STYLE (413) Analyzes style and readability of your writing. Works with Wordstar, PC-Type, & ASCII.

PC-TYPE+ (421-423) (3 disks) Excellent. Has mail merge, 100,000 word spelling checker. Interfaces with PC-File +, PC-Style.

SPREADSHEETS

EZ-SPREADSHEET (509) Easy but powerful. For the beginner.

PC-CALC+ (512-514) (3 disks) Jim Button's famous Lotus clone.

SPREADSHEET TEMPLATES

LOTUS MACROS (601) Save hours of work. (Requires Lotus 1-2-3)

LOTUS SPREADSHEET TEMPLATES (602) Ready made. (Requires Lotus 1-2-3)

TECHNOJOCK TUTORIALS (626) Teaches Lotus and dBase, menu-making, etc. Excellent.

ACCOUNTING AND FINANCE

PC-GENERAL LEDGER (701) Popular accounting system. Easy!

MR. BILL (702-703) (2 disks) For billing customers; invoices, client reports, audit trail.

CPA LEDGER (706-708) (3 disks) Complete GL.

PC-STOCK (712) Analyze market trends. Includes graphics.

PC-PAYROLL (714) Menu driven payroll system.

PERSONAL FINANCE MANAGER (715) Household budget manager. Keep track of checking, savings, investments.

CHECKBOOK (752) Complete system with online help.

EMPLOYEE MANAGEMENT (793) Teaches principles of the famous One-Minute Manager.

DATABASE PROGRAMS

PC-FILE+ 2.0 (801, 805, 837) (3 disks) Rated better than dBase III+ by Consumer Reports.

PC-GRAPH (802) Creates graphics directly from PC-FILE.

FILE EXPRESS 4.0 (803-804) Powerful system. Allows 32,000 records. Sorts up to 10 key fields.

NEWBASE (809) User-friendly menu-driven DB system.

DBASE III ROUTINES (815) Over 60 helpful dBase III routines.

WAMPUM (824-825) (2 disks) Dbase III clone. dBase III compatible

GRAPHICS

KEYDRAW CAD SYSTEM (1001-1002) (2 disks) Popular. (Requires color graphics.)

3-D (1003) Create and edit 3-D objects. (Requires color graphics.)

SIDEWAYS (1007) Prints your text sideways.

ANIMATOR (1011) Create animated pictures on your PC.

SIMCGA (1027) Use with Hercules graphics card/compatibles to run programs requiring CGA.

READ MAC (1041) Digitized pictures of Ashley, Cheryl, Brooke and Spock. ADULTS ONLY!

FINGERPAINT (1050) Use keyboard or mouse to draw. Like MacPaint. (Requires CGA or EGA)

DANCAD 3-D (1051, 1052) (2 disks) Create 3-D graphics. Rotate, magnify, etc. Runs on CGA, EGA, or Hercules/compatibles.

TELECOMMUNICATIONS

Q-MODEM 3.0 (1101-1102) (2 disks) Fast modem program.

RBBS-PC (1107-1109) (3 disks) Multi-user BBS.

PROCOM 2.42 (1112-1113) (2 disks) Hacker's delight. Redial capability. Latest version.

SECURITY/HACKING

UNPROTECT PROTECTED PROGRAMS (1202) Make backups of protected software.

UNPROTECT II (1203-1204) (2 disks) More ways to backup commercial software.

UNPROTECT III (1205) Unprotect Softguard protection.

UNPROTECT IV (1206) More programs you can unprotect.

DOS

DOS TUTORIAL (1301) Teaches you to use DOS.

DOS HELP (1302) Convenient help when a problem arises.

STILL RIVER SHELL (1304) Run DOS commands from a menu. Makes using DOS easy.

BATCH FILE TUTORIAL (1305) Utilize batch file processing.

DOS TIPS (1311, 1314) (2 disks) Advanced tutorial.

BASIC

PC-PROFESSOR (1401) BASIC tutor.

BASIC PROGRAM GENERATOR (1402) The menu driven way to write programs.

SWISS ARMY KNIFE (1406) Tools for programming in BASIC.

APPLICATIONS

FORM LETTERS (1907) Commonly used form letters and business applications.

EZ-FORMS (1908) Make forms to meet different needs.

MAIL MASTER (1910) Create mailing lists. Print letters and labels.

ASTROLOGY 9.4 (1916) Calculate your own chart. Prints wheel.

HOME INVENTORY (1966) Track all your possessions.

LOTTO MASTER (1981) Play the lotteries w/scientific methods.

MEMBERSHIP SYSTEM (1984) Great for clubs, churches, etc.

FAMILY HISTORY (2203-2204) (2 disks) Create files and genealogical reports.

DR DATA LABEL (2327) Powerful mailing list program. Customize labels to size and format.

CITY DESK (2513) Simple desktop publisher.

UTILITIES

DESK COMMANDO (2607) Better than Sidekick. Many features.

EPSON PRINTER UTILITIES (2705) Change print modes on Epson or compatibles.

LINCOMATIC BANNER (2714) Creative banner making.

LIGHTNING PRESS (2718) Printshop clone. Includes graphics for greeting cards, letterheads, posters, newsletters, etc.

MASTERKEY (2805) Like Norton's. Retrieve deleted files.

AUTOMENU (3003) Make PC menu driven. Multiple passwords.

PC LABS BENCHMARK (3039) Comprehensive testing. Compare computers before you buy.

RELIGION

THE BIBLE (3301-3306) (6 disks) Old Testament, King James version.

THE BIBLE (3307-3308) (2 disks) New Testament, King James.

WORD WORKER (3309-3310) (2 disks) Bible search program. New Testament, King James.

BIBLEMEN (3330) Excellent Bible quiz program.

MICRO STAR

POST OFFICE BOX 4078 • LEUCADIA, CA 92024-0996

HOURS: Monday - Saturday 7 AM - 5:00 PM, Pacific Time

TERMS: We accept MasterCard, VISA, Checks (allow checks 10 days to clear), Money Orders, and COD (add $4).
MINIMUM ORDER: 5 Disks, $3.49 per disk. For 3½" format add $1/disk.
SHIPPING & HANDLING: $3.50 (Total per order).

CALL TODAY FOR FREE CATALOG

NATIONAL: 800-443-6103
CALIF: 800-443-7430
FOREIGN: 619-436-0130

SUPER TURBO MODEL P86
$699
4.77/10 MHz 8088 Processor
- INSTANT ON TURBO, BUTTON OR KEYBOARD SELECTABLE
- 256 KB RAM EXPANDABLE TO 640
- 360 KB DSDD FLOPPIE
- MONOCHROME GRAPHICS ADAPTOR
- "AT" KEYBOARD w/CARRY CASE
- PARALLEL PRINTER PORT
- CLOCK/CALENDAR
- 135 WATT POWER SUPPLY
- KEY LOCK, RESET BUTTON
- FULL 8 EXPANSION SLOTS
- 8087 SOCKET
- 9" MONOCHROME HI-RESOLUTION

TURBO MODEL P386
$2,999
16 MHz Zero Wait State
Landmark = 20 MHz
- CMOS MEMORY, 16 CHANNEL INTERRUPT 7 DMA CHANNELS
- 1 MEG RAM, EXP. TO 8 MB
- 1.44 MB FLOPPIE
- 1.2 MB FLOPPIE
- MONOCHROME GRAPHICS ADAPTOR
- "AT STYLE" KEYBOARD AND CASE
- PARALLEL PRINTER PORT
- 200 WATT POWER SUPPLY
- KEY LOCK, RESET BUTTON
- FULL 7 EXPANSION SLOTS
- 80387 SOCKET
- 9" MONOCHROME HI-RESOLUTION

TURBO MODEL P286
6/8/12 MHz Zero/1 Wait State
Norton SI (4.0) 11.7
- 512 KB RAM EXP. TO 1 MB
- 1.2 MB FLOPPIE
- MONOCHROME GRAPHICS ADAPTOR
- "AT STYLE" KEYBOARD AND CASE
- PARALLEL PRINTER PORT
- 185 WATT POWER SUPPLY
- KEY LOCK, RESET BUTTON
- FULL 8 EXPANSION SLOTS
- 80287 SOCKET
- 9" MONOCHROME HI-RESOLUTION
$1,099

TURBO MODEL D286
$989
6/8/10/12 MHz Zero/ 1 Wait State
Norton SI (4.0) 11.7
- 512 KB RAM, EXP. TO 1 MB
- 1.2 MB FLOPPIE
- MONOCHROME GRAPHICS ADAPTOR
- ENHANCED "AT STYLE" KEYBOARD
- PARALLEL PRINTER PORT
- 200 WATT POWER SUPPLY
- KEY LOCK, RESET BUTTON
- FULL 8 EXPANSION SLOTS
- 80287 SOCKET
- HIGH RES. AMBER MONITOR

TURBO MODEL D386
$2,899
16 MHz Zero Wait State
Landmark = 20 MHz
- INTEL 32 BIT 80386 CPU
- CMOS MEMORY, 16 CHANNEL INTERRUPT 7 DMA CHANNELS
- 1 MEG RAM, EXP. TO 8 MB
- 1.44 MB FLOPPIE
- 1.2 MB FLOPPIE
- MONOCHROME GRAPHICS ADAPTOR
- ENHANCED "AT STYLE" KEYBOARD
- PARALLEL PRINTER PORT
- 200 WATT POWER SUPPLY
- KEY LOCK, RESET BUTTON
- FULL 7 EXPANSION SLOTS
- 80387 SOCKET
- HIGH RES. AMBER MONITOR

SUPER TURBO MODEL D86
$499
4.77/10 MHz 8088 Processor
- INSTANT ON TURBO BUTTON OR KEYBOARD SELECTABLE
- 256 KB RAM, EXP. TO 640
- 360 KB DSDD FLOPPIE
- MONOCHROME GRAPHICS ADAPTOR
- "AT STYLE" KEYBOARD
- PARALLEL PRINTER PORT
- CLOCK/CALENDAR
- 150 WATT POWER SUPPLY
- KEY LOCK, RESET BUTTON
- FULL 8 EXPANSION SLOTS
- 8087 SOCKET
- AMBER GRAPHICS MONITOR

LUNCH BOX TURBO MODEL L286
$1,299
6/8/10/12 MHz Zero/ 1 Wait State
12 MHz Throughput
- 512 KB RAM, EXP. TO 1 MB
- 1.2 MB FLOPPIE
- 200 WATT POWER SUPPLY
- "LCD" ADJUSTABLE MONITOR, HIGH RESOLUTION - SUPPORTS EXTERNAL CGA/MGA MONITOR
- INSTANT ON TURBO
- KEYBOARD, BUTTON SELECTABLE
- KEY LOCK, RESET BUTTON
- 80287 SOCKET

LUNCH BOX TURBO MODEL L386
$2,999
16 MHz Zero Wait State
Landmark = 20 MHz
- INTEL 32 BIT 80386 CPU
- 1 MEG RAM, EXP. TO 8 MB
- 1.44 MB FLOPPIE
- 200 WATT POWER SUPPLY
- "LCD" ADJUSTABLE MONITOR, HIGH RESOLUTION - SUPPORTS EXTERNAL CGA/MGA MONITOR
- KEY LOCK, RESET BUTTON
- 80387 SOCKET

PCTek Computers
(714) 842-6080
9582 HAMILTON AVENUE, SUITE 288
HUNTINGTON BEACH, CA 92646

ALL SYSTEMS FULLY ASSEMBLED & TESTED

DEALERS: CALL FOR PORTABLE CASE PRICES

1 YEAR WARRANTY PARTS & LABOR

Genius Mouse + TopDOS $79.00

Genius Mouse GM-6 ST
- Microsoft Serial Mouse compatible.
- Menu Maker & Universal Mouse Driver.
- Mouse Pocket.
- No pad, use standard RS-232C.
- Super high resolution: 200DPI.
- Super Tracking speed: 500mm/sec up.

GM-6 Mouse ST..........................$59.00
add TopDOS Software...............$79.00
add FrontPage Personal Publisher Software $119.00
GM-6 Plus Mouse with Dr. Halo III Graphics.........$69.00
add TopDOS Software...............$89.00
add FrontPage $129.00

Dealers & Distributors Welcome!

2001 Sales, Inc.
16580 Harbor Blvd., Ste A,
Fountain Valley, CA 92708
(714) 531-6551
Please add $5.00 for S&H. Check or Money Order, CA resident add 6% Sales Tax.
Mouse with One year Limited Warranty.

TopDOS Software
- Enhances DOS commands such as CLS, DIR, COPY, DEL, and TREE.
- Adds powerful new DOS commands such as MOVE, MACROS, EGA, STUFFKEY, HISTORY, WHEREIS, CLUSTER, EDIT, CLEAR, TREECOPY and HELP.
- Makes hard disk file management effortless.
- Works with Mouse, LAN and PS/2.

Look what InfoWorld said about TopDOS ..... "As a program that offers to improve DOS, TopDOS is a MARVEL."
TopDOS listed at $69.95 Special: $34.95
TopDOS demo program $3.00
FrontPage listed at $199.95 Special: $99.95

industry and to Microsoft, which claims that Apple made no effort to settle its differences before filing suit.

Apple's complaint says that the screen displays produced by *Windows 2* are illegal copies of its Macintosh screen; Apple asks that Microsoft be stopped from marketing *Windows 2* and that Microsoft pay Apple unspecified damages arising from the case. In response, both Microsoft and Hewlett-Packard have denied any wrongdoing. They claim that their products, while having some similarities to the Macintosh user environment, have significant visual differences and therefore are not infringements on Apple's copyright. Also, Microsoft had an agreement with Apple licensing the Macintosh's visual display; Microsoft claims that this still on disk agreement covered them for *Windows 2*, while Apple claims that it doesn't. At press time, Microsoft had not countersued Apple, but may do so in order to assure developers designing programs for *Windows* or OS/2 Presentation Manager that Microsoft will defend those environments. People who have seen IBM's pre-release version of OS/2 Presentation Manager say that it looks just like *Windows 2*.

In an attempt to mollify applications developers, Apple stated in its press release on the case that "Apple has no plans to initiate litigation against any third party application developer." However, the wording of the complaint is unclear on this issue. Apple requests that "defendants [Microsoft and Hewlett-Packard]...and those persons in active concert or participation with them" be prevented from infringing on Apple's copyright. Many Windows and OS/2 developers have cut back on their efforts until it is clear how Apple will handle third parties. The inclusion of Hewlett-Packard in the case has scared many developers, since *New Wave* is a user environment that is, in fact, a *Windows 2* application. Since there are no legal definitions of "applications," "operating systems," and "user environments," Apple could conceivably claim that any product that uses the *Windows 2* interface infringes on the Macintosh interface.

Much of the definition of the case will come during the next few months as Microsoft and Hewlett-Packard respond to Apple's claim and make counter-claims of their own. Clearly, there is a great deal of similarity in the screens between the Macintosh user interface and *Windows 2*. However, there is a fair amount of difference as well. The major difference that will probably be fought about in court is that each window in *Windows 2* has its own independent menu bar, while the Macintosh only has one menu bar. Also, Apple stressed the importance of the mouse in its complaint, but you do not need to use a mouse to use the Windows interface. Thus, the case may end up emphasizing the differences in the "feel" more than the "look." Icons in the two systems are used differently: they represent programs and documents on the Macintosh but represent running programs under *Windows 2*.

In an interesting move, Apple has requested a jury trial in its initial complaint. This indicates that Apple feels more confident presenting its case to a jury than to a judge. Although the moral and legal merits of the case will certainly be argued extensively in the computer press in the coming months, and a great deal of legal maneuvering will take place, the outcome of the case and the damages awarded will most likely be decided by a jury of average citizens.

MicroTimes will cover this story carefully in the coming months, given its crucial significance to the industry.

Come To

COMPUDYNAMICS

Save Time & Money
Get Selection & Support

WE CAN BEAT ANY PRICE!

Leading Edge®

dual floppy	$749
20 MB hard disk	$989
30 MB hard disk	$1059
Dual floppy w/180D printer	$945
D-2 30 MB 640K	**best price**

Price includes monitor, keyboard, DOS & BASIC.

AST Premium/286™

w/20 MEG H/D complete	$1879
w/40 MEG H/D complete	$2099
Model 140 (monitor optional)	$2599

- 6.8 10 MHz operation
- 0 wait state memory access
- 1.2 Meg floppy drive
- 1 year warranty
- parrallel & serial ports
- PRICE INCLUDES MONITOR, KEYBOARD, VIDEO CARD, DOS, BASIC

AST "386" 40 MB
. . .In Stock. . .
Best Price
. . .CALL

Authorized dealer. AST & AST logo are registered & AST Premium/286 are trademarks of AST Research.

EPSON® EQUITY

I + 20 MB	$1189
II + (AT) 20/40 MB	$1579/1729
III + 40 MB	$2109

LAPTOPS

(NEW) w/Backlit	$1599
(NEW) w/HD 20 MB	$2299

COMPAQ DESKPRO

w/ 20 MB H/D	$2199
w/ 40 MB H/D	$2499

Price includes monitor, keyboard, video card, serial & parallel ports, clock

NEW 12 MHz

hp

LASERJET II w/toner	$1589
DESKJET In Stock	$720

TOSHIBA

LAPTOPS

3200	$CALL .$2299
3100-20	$2899
T1200 "NEW"	$2249
T1000	$729

PRINTERS

321SL	$469
341 SL	$649

EPSON

EX 800	$420
LX 800	$199
LQ 850	$519
LQ 1050	$673
FX 86E	$289
FX 286E	$425

PRINTERS

LQ 500 w/tractor	$359
Laser Printer	$1376
EX 1000	$459
LQ 800	$299
LQ 1000	$529
LQ 2500	$843

NEC

MULTISPEED EL	$1479
MULTISYNC VGA	$569

CITIZEN PRINTERS

Premier 35	$449
MSP10	$259
MSP15	$349
120D/180D	$185

Ventura Software 1.1	$495
EGA Monitor/Card	$495

Seagate HARD DISKS

20/40 MB $299/445
plus installation charges

These prices subject to change without notice.

COMPUDYNAMICS 213/854-1104

1066 1/2 S.La Cienega
Between Pico & Olympic
Open Daily 10 A.M. - 7 P.M.

Leasing & Financing Available

Baby Bells Can Provide Network And Electronic Mail Services, Says Judge Green

Regional Bell Operating Companies (the local telephone companies, also known as RBOCs) can now operate many of the businesses from which they were previously prohibited. These businesses, including most of the services necessary for major network administration, will allow the RBOCs to operate their own huge digital data networks and thus offer services to large companies with many offices, which up until now had to be provided by the customers themselves or by value-added resellers. For example, many large corporations have offices spread over a city or a state, and transmitting data between offices has usually consisted of leasing private data lines and buying expensive equipment for each office. Now, companies can go to the local RBOC and lease the services and equipment directly from them. Of course, this will also mean that the RBOCs will have to support the services that they sell.

Judge Harold Green, who oversaw the breaking up of AT&T and has been the primary magistrate in the ensuing multitude of cases, also gave the RBOCs the right to operate their own voice and electronic mail services. Many people expect the RBOCs to begin offering advanced voice store-and-forward services, which would make home answering machines almost completely obsolete. These services could provide different "voice mailboxes" for each person in a house, would never be accidentally erased, and could be retrieved from any telephone in the world. If the RBOCs get into electronic mail, the major e-mail services such as MCI Mail might become superfluous, since it is likely that an RBOC e-mail service would have hundred times more users than a commercial service.

The judge made it clear, however, that the RBOCs were still prevented from operating information services due to the great potential for an RBOC to become an information monopoly if they controlled both the information and the access to the information. Many of the RBOCs would dearly love to become information providers. They give examples of services they would like to render, but from which they are still prohibited, such as electronic yellow pages. However, the judge's decision shows that he has become more willing to let the telephone companies become providers of computer-related convenience services and site-interconnection services.

Unisys Will Use UNIX And SPARC Chip In Future Machines

AT&T and Sun signed agreements last month with Unisys, strengthening its ties and giving Sun a boost in its efforts to standardize UNIX around Sun's new RISC architecture called SPARC. Unisys, the third largest computer company in the U.S. (after IBM and DEC), has become heavily reliant on UNIX systems in the past few years and wants to expand its options for the future. The move aroused anger in some of the companies who have been complaining in the last few months that AT&T is becoming too closely aligned with Sun and that it is not living up to its promise of UNIX being an open operating system.

Unisys says that its SPARC systems will complement its current UNIX offerings. Currently, UNIX systems account for over $500 million a year for Unisys, and its agreements with AT&T and Sun are expected to help continue their dominance in the UNIX market. Unisys has a very large portion of the government UNIX market, and hopes that that market will move towards the SPARC architecture as AT&T and Sun set the standards for UNIX on that chip. One of the features of the SPARC chip that attracted Unisys was that it was available from many different chip manufacturers and that SPARC chip manufacturers will add features to the chips they produce to make them competitive with their rivals. After Unisys' announcement, LSI Logic of Milpitas announced that they will become the fourth manufacturer to make SPARC chips.

Apple Buys Network Innovations Corporation To Expand Networking And SQL Offerings

In a quick move into the mainframe-connectivity market, Apple last month bought Network Innovations Corporation, a small company in Cupertino with a great deal of software. Network Innovations made a splash in January by announcing its CL/1 package that allows Macs and mainframes on the same network to pass data and database procedures back and forth. CL/1 works over a variety of networks such as IBM's SNA and APPC/LU 6.2, DEC's DECNet, and Apple's LocalTalk. SQL is also thee data language which will be supported by IBM's forthcoming OS/2 Extended Edition, as well as products from companies such as Microsoft and Ashton-Tate.

Apple recently announced its intention for Macintoshes to be able to share data with DEC systems, and CL/1 was one of the prime movers in that market. By acquiring Network Innovations; Apple now has much more of the technology necessary for achieving a high level of integration with DEC's VAX products. The fact that CL/1 also

Come to Beverly Hills

& Pay Discount Prices

Pillarco Computer Center

In Touch with Tomorrow
TOSHIBA

Toshiba Laptop

T5100/386 + 40 MB HD	$4699
T3200/286 + 40 MB HD	$3699
T3100/20 MB HD	$2899
T3100/10 MB HD	$2299
T1200/20 MB HD	$2250
T1000	$749

ZENITH 183 w/10 MB/20 MB	$1999/2299

NEC

NEC Laptop HD w/20 MB	$2199
Multispeed 2 Dr/EL	$199/1479

AST 386 in Stock

AST RESEARCH INC.

AST Premium/286

Model 80	Call
Model 140	Call
EGA Complete System w/40 MB + EGA Card + EGA Monitor	$2395
Mono Complete System w/40 MB + Mono Card + Mono Monitor	$1999

LEADING EDGE
AUTHORIZED RETAIL DEALER

Model D2 40 MB HD/1-2 floppy—640K—Card—Monitor	$1699
Model D 2 Dr/20 MB/10 MB	$729/999/1059

HEWLETT PACKARD

Laser Jet II w/toner	$1589
Scan Jet w/interface	$1359
Paint Jet	$999
Desk Jet	$799

Memory Upgrades & Fonts in Stock

EPSON COMPUTERS

FX 86E	$299
FX 286E	$430
EX 800	$425
EX 1000	$459
LQ 500	$349
LQ 850	$529
LQ 1050	$669
LQ 2500	$849
LX 800	$210

IBM

Model 60/70 MB	$3495
Model 30/2 Dr/30 MB	Call
Model 50 w/20 MB	Call
Model 80 AT	Call
XT/AT/AT 399	Call

COMPAQ

Deskpro 286 12 MHz in stock	$1699
with 20 Meg/with 40 Meg	$2149/2449
Deskpro 386 20 MHz 60 Meg	$5599
Deskpro 386 20 MHz 130 Meg	$6599
Portable II Model 4 original	$2659
Portable III Model 20/40	$3499/4099
Portable 386 20 MHz 40 Meg	$5699
Portable 386 20 MHz 100 Meg	$6799

ALR-386

w/66 MB HD—1.2 floppy 1 MB RAM

16 MHz	$2999
20 MHz	$3299

NOVELL
Authorized Dealer
Netware
By Appointment Only

A Tradition in High Technology
Specialities
Accounting • Desktop Publishing
Educational • Legal/Insurance
Medical/Dental • Networking • Retail
Video • Word Processing
and Many More

Training • Support • Service

We Make It Simple Just for You

Diconix Printer 150/300W (in stock)	$330/475
NEC P-2200 Printer 24 Pin	$359
Micropolis 40/70/130 MB	$650/800/Call
New Vega EGA/VGA Card	$229/320
Canon Laser Jet Printer w/toner/Citizen	$1499
Panasonic 1091i Model II/1092i	$210/330
Symphony 3½" + Metro 3½" Both	$299
Wyse 286/386 All Models	Call, Call, Call
Apple Image Writer	$459
Toshiba Page Laser 12	$2599
Seagate HD wo/30 Meg	$289/325
Toshiba 321SL/341SL	$459/649
Citizen Premiere 35/MSP 40	$459/329
Diconix Portable	$339
Sony 1302/1303/1311 CR	$575/489/389

Pillarco, Inc.

Open Daily 9:30am-6:30pm
Pillarco Computer Center
213-275-2200
179 Beverly Dr.
Beverly Hills, CA 90212

Prices subject to change without notice.

integrates with IBM mainframes makes the deal all that much better, according to many Apple-watchers. This is the first company which Apple has bought outright, and many felt that this will help Apple be able to support all the technologies that Network Innovations developed at once.

Many Macintosh industry leaders are already lining up behind CL/1. At the DEC-specific DEXPO show in February, Lotus, Ashton-Tate, Blyth, and ACIUS all showed applications retrieving and modifying data from VAX databases. Although all programs were in preliminary form, Network Innovations was able to line up the big hitters in the market and show them all using CL/1 within a month of the product's release. Apple hopes to push CL/1 as a new industry standard for SQL access; other vendors are skeptical that it will become a standard, but think that it will certainly become a major player in the burgeoning SQL field. Even if Apple is unsuccessful at making CL/1 a widely-accepted standard, it can certainly rely on the major database manufacturers making their products be able to conform to the CL/1 standard.

Network Innovations has been working to attract Apple's attention in the last few years. For example, its first program to use CL/1 was an interface between Apple's *HyperCard* and a VAX database. The link, announced in January, lets the user ask questions in SQL format from a window in *HyperCard*. More important, however, is the fact that the driver is an addition that users can add to their copy of *HyperCard* so that programs that generate requests can also use the driver. For example, a program which normally just reads data out of a regular Mac data file could be very easily modified to read the data from a VAX (or, in the future, an IBM) database. Apple is likely to release a front end for this product later this year so that *HyperCard* programmers can access information from CL/1 servers through their stacks.

Network Innovations is not only a Mac company, however. It is also the developer of *Multiplex*, a PC program for accessing data from mainframes. Although its mainline product runs under MS-DOS, NI is one of the few developers who support Microsoft *Windows* fully. Its *Windows* product can exchange data with Microsoft *Excel* for the PC through the *Windows* Clipboard. This means that you can write an *Excel* macro to read data off of a remote mainframe, and have it appear correctly formatted in your spreadsheet, without having to run a conversion program. *Multiplex* has been available for about a year.

The announcement clouds Apple's relationship with Sybase, which it bought part of last year. Sybase makes a product with similar features but different implementation. Since Apple did not announce what it would do with the software that Network Innovations had developed, no one knows for sure if Apple will possibly support both methods for providing SQL service to Macintoshes.

Network Innovations says that it will continue to operate as an independent company working closely with Apple. They do not intend to move to Apple offices. Apple staff will join the board of Network Innovations. The company was privately held before being bought by Apple.

Unisys' commitment to help establish that standard make it all the more likely that other manufacturers will use SPARC in the future. Unisys hopes to start shipping SPARC systems within a year, according to the company; however, it will probably take at least two years for them to produce a solid high-end system that is as powerful as its current line.

Atari Sues Micron Technology Over Higher-Priced Chips

Complaining that RAM-maker Micron Technology reneged on an order and raised its prices unfairly, Atari has filed a breach of contract and antitrust lawsuit against the Boise, Idaho company. Atari claims that Micron Technology canceled a $11.25 million order for dynamic RAM (DRAM) chips for the Atari ST computer and then offered Atari the chips at a much higher rate. The price of RAM chips has been increasing, and the supply has dropped, since the US forced Japanese manufacturers in 1986 to sign an agreement to sell their RAM chips at a higher price.

Atari claims that Micron Technology has a virtual monopoly over DRAM manufacture. American companies are restricted in the number of DRAM chips they can buy from Japan, and there are really only two DRAM manufacturers in the U.S. (Micron Technology and Texas Instruments). In its suit, Atari complains that Micron Technology is restricting Atari's business by being able to charge whatever it wants for the DRAM. Although Atari has been active in trying to change the federal restrictions on the number of chips that can be imported, they have been unsuccessful due to many factors. According to lawyers at Atari, this is one of the reasons that they brought the suit against Micron Technology.

Although American chip companies have been able to make more money selling their chips, many computer manufacturers are starting to complain bitterly that the agreement has forced them to increase the cost of their computers (and in some cases limit the number produced) since the components are costing more and are harder to buy. Atari's suit is the first one claiming antitrust violations against an American chip maker. Other manufacturers have been hesitant to take such a step because they feel that suing a major supplier which has a stranglehold on the DRAM market

DISCOVER THE DISCOUNT

25¢ BULK

Bulk diskettes come with hub rings, packaged in poly bags. Add the following extras.

Paper sleeves	2¢
Tyvek sleeves	4¢
Labels & tabs	2¢

(Minimum order 100)

33¢ WHITE BOX

Packaged 10 disks in a plain white box and includes the following: sleeves, tyveks, labels, tabs.

44¢ COLOR

Including: sleeves, labels, tabs. Light blue, white, lavender, gray, red, brown, green, yellow, burgundy, blue, rainbow pack.

99¢ 3.50 Double Side

95¢ 3.50 Single Side

59¢ 5.25 HD (1.2 MB)

PCCI

Color high density available.

DISKETTES

Verbatim.

Data Life 5¼" DSDD	$8.50
Data Life 5¼" HD	$13.95
Data Life Plus 5¼" Teflon Protection	$9.50

maxell

5¼" box of 10 disks	$8.95
5¼" HD	$17.95
3½" HD	$43.00

SONY

3½" DSDD	$16.50
3½" HD	$39.99

Dysan

5¼" DSDD	$9.99
5¼" HD	$13.50

DATATECH

5¼" DSDD	$4.95
5¼" HD	$9.90
3½" DSDD	$11.50

MEMOREX

5¼" DSDD	$5.95

OPUS

5¼" DSDD	$5.50
5¼" HD	$14.99

High Density for AT
Colors:
Red, blue, yellow, green, gray, burgundy, white ....89¢

ATTENTION:
DEALERS/VOLUME BUYERS

We'll beat any advertised price for diskettes in Southern California!

ACCESSORIES

Computer Paper 9½" x 11" 2,500 sheets	$18.99
Computer Paper 14 7/8" x 11" 3,000 sheets	$29.99
Computer Cables (Parallel, Serial, etc.)	$7.99
Power Surge Control (UL)	$8.99
AC Power Pad (Master Pad)	$22.99
Keyboard Drawer (Wooden or Gray Metal	$37.00
5¼" Diskholder holds over 120 diskettes	$10.99
5¼" Diskholder holds over 100 diskettes	$8.99
5¼" Diskholder holds over 50 diskettes	$7.99
5¼" Smokey Deluxe Library Case holds 10 disks	$1.49
3½" Diskholder holds over 80 diskettes	$10.99
3½" Diskholder holds over 50 diskettes	$9.99
3½" Diskholder holds over 25 diskettes	$4.99
3½" Deluxe library case holds over 20 diskettes	$14.99
3½" Smokey Deluxe Library Case holds 10 diskettes	$1.49
5¼" Head Cleaning Kit for disk drives	$3.99
3½" Head Cleaning Kit for disk drives	$3.99

Pillarco, Inc.

Prices subject to change without notice.

Monday - Friday 8:30 - 7:30
Saturday 9:30 - 6:00

1633 Westwood Blvd #120 Los Angeles, CA 90024
(213) 477-5442

SALES • SERVICE • RENTAL • LEARNING CENTER • COMPUTER SERVICES
SEMINARS • TECHNICAL CENTER • SOFTWARE • ACCESSORIES • SUPPLIES

SOS COMPUTERS

YOU ARE THE WINNER!
WE ARE THE SERVICE LEADER.

SOS Computers wants to earn your business. You have told us that service is important to you. The SOS Services Group offers training in our own Learning Centers, equipment rental, repair services, laser printing, color printing, media conversion, image and text scanning, informative free seminars and a host of other services.

TOP SERVICE, TOP PRODUCTS, TOP PEOPLE, RIGHT PRICE.

We are the Headquarters for Macintosh. Come in and see why!

Macintosh SE

The refined computer that revolutionized the idea that using a computer can be easy for everyone and work the way people work alone, in groups, or thru inter-communication. The Macintosh SE with 20Mb of disk storage, 1000K RAM,, Hypercard software, tutorials, and SOS equal top value.

LaserWriter NT, NTX

The new LaserWriters from Apple Computer set the standard again. Modularity, expandability, functionality, performance. We love them - you will too!

Apple IIc

The Apple IIc is the educational standard today!

This is the computer of choice for people concerned about their children's education and the cost of getting started with computers.

$677. W/12" mono monitor

Ask us about RENTAL

Amiga 2000

COMMODORE AMIGA

The powerful business video presentation and animation system. Running IBM software makes it the best of both worlds.

• 7 Expansion slots • Built-in speech, 4 voice 2 channel output • Serial, centronics, lightpen, genlock interfaces/ports • Standard system on SALE includes CPU/Drive, Keyboard, Monitor, Mouse

$1877.

Amiga 500

This is the value leader today in high technology for the home. The same technology as the 2000 in a less expensive case.

$889.00

Hyundai A PERFORMANCE 286

For many "drivers" the basic Hyundai 286 system will do the trick. Featuring a dual-speed 80286 processor (8 or 10MHz) 30 MG hard drive, amber monitor, six expansion slots and FREE bundled word processing and business software, the Hyundai offers high performance right off the starting line - that is, right out of the box.

$1694.

Shiva NetModem
AppleShare networkable modem. Any Macintosh on the network can access it, direct or remote.

Classes In March
HyperCard Introduction
Introduction to Macintosh
Introduction to MS-DOS
Lotus 1-2-3 Introduction
Excel Introduction
Word for Mac Intro
Introduction to Amiga
— AND MANY MORE —
Call for Information

STORE HOURS
Mon - Fri 9:00 - 6:00
Thursday 9:00 - 9:00
Saturday 10:00 - 6:00

362 S. LA BREA AVENUE
LOS ANGELES, CA 90036
(213) 857-0371

23647 CALABASAS ROAD,
CALABASAS, CA 91302
(818) 884-2064

Apple® and the Apple Logo are trademarks registered to Apple Computer, Inc. Macintosh™ is a trademark registered to Apple Computer, Inc. Amiga is a registered trademark of Commodore-Amiga, Inc.

TRI-NATIONAL COMPUTER
PHONE: (714) 893-1888
13075 SPRINGDALE ST. WESTMINSTER, CA 92683 (LUCKY SPRINGDALE CENTER)
OPEN HOURS MON-SAT 9-7

Turbo XT SPECIAL
~~$435~~
$425

- 4.77/8 MHz
- 256 K RAM on board
- Two 360 K FDD - 150 W PS
- AT style keyboard
- AT look-alike case w/3 LED's

MONO SYSTEM ADD $120
COLOR SYSTEM ADD $295
EGA SYSTEM ADD $475
20 MB HD SEAGATE ADD $270
30 MB HD SEAGATE ADD $290

AT-286

- 6/10 MHz AT Mother board 80286
- 512 K RAM (exp. to 1 MB)
- 360 KB Drive w/HDFD controller
- 200 W Power Supply
- 101 Enhanced Keyboard
- MGP and Monochrome Monitor
- AT Deluxe case (keylock, 3 LED's ...)
- Clock/Calendar

only $875

Optional
- Mother board (USA Made) ADD $224
- 40 MB HD SEAGATE 251 ADD $390

AT-286 PORTABLE SI=11.2
$1,195
Price subject to change without notice

16 MHz-386

- 80386-16 Mother board (USA Made)
- 1 MB RAM on board (exp. to 4 MB)
- 200 W Power Supply
- WA2 HD/FD controller
- 1.2 MB Drive
- AT Deluxe case
- MGP and Monitor
- 101 Enhanced Keyboard

$1,990

ALL SYSTEM ARE FULLY TESTED & ASSEMBLED W/ 1 YEAR WARRANTY

AT & XT are registered trademark of IBM

could prevent them from being able to buy enough DRAM to produce their computers. However, many of these manufacturers have been publicly and privately applauding Atari's suit.

Motorola Confirms It Is Working On New RISC Chip

The next Motorola CPU will not be in the 68000 family, but will be the first of a new family of RISC chips which Motorola is calling the 88000 family. The first release will be a three-chip set which will run at 17 MIPs (million instructions per second), according to Motorola. The chip set will perform both standard math as well as floating-point math, giving Motorola an advantage in the number-intensive scientific computing fields. The 88000 family uses "Harvard-style" parallel architecture, which means that the CPU knows where to look for the next set of instructions it will execute, speeding up execution significantly. Motorola emphasized that the 88000 family will not replace the 68000 family, but would open new markets to Motorola and to computer companies who use the 88000 chips in new computers. The company says that over 100 computer manufacturers are currently evaluating the 88000 chips.

Information Bill Of Rights Passes Easily In Assembly

Assembly Constitutional Amendment 36, also known as the information bill of rights, passed in the California Assembly by 57-4 last month. It now goes the California Senate for approval for the November ballot. The measure, authored by Assemblyperson Gwen Moore, prohibits unwarranted searches of computer equipment and unwarranted restrictions on computer communication; basically, it would give electronic communication the same rights and restrictions as regular communication. The bill has been widely supported by the microcomputer industry and users since it gives bulletin boards and information services the same rights as their non-computerized counterparts. ACA 36 must be considered by the Senate Judiciary and Senate Constitutional Amendments committees and the full Senate before June 30 in order to make it onto the November state-wide ballot. Assemblyperson Moore thinks that the bill may be decided by the Senate this month.

California PUC Considering Extension Of Surcharges To Finance TDD Service

The Public Utilities Commission (PUC) may extend the temporary telephone surcharges it placed in order to fund a network for deaf and other disabled people in the state. The project may run out of money very soon without an extension of funds, and the PUC is looking for other resources for money for the project. The project provides TDD and other specialized equipment for deaf and disabled people, as well as establishing a telecommunications network for people with these devices to communicate. Although residential and business customers help pay for the fund, cellular phone, mobile phone users, Centrex, and PBX users do not. The Deaf and Disabled Telecommunications Program has the strong support of the disabled community, although its existence is almost unknown by others in the state. The PUC will hold hearings on extending the fund in the near future.

Apple Unveils CD-ROM Drive For The Macintosh

At a CD-ROM conference mostly noted for the lack of interesting announcements, Apple showed its

PC Plus Consulting Presents:

$2.99 per disk

FREEWARE

$2.99 per disk

Public Domain and User-Supported Software for IBM and Compatibles - DOS 2.1 and Higher.
Programs and Utilities to meet all your computing needs.

ADULTS ONLY

☐ **ADULTS ONLY/1 (147)** - German-made, great animated graphics. CGA required.

☐ **STRIP POKER (148)** - Watch out for your pants. CGA & Basic required.

☐ **X-RATED PRINTMASTER (149)** - X-Rated graphics for Printmaster Plus.

☐ **X-RATED PRINTSHOP (150)** - X-Rated graphics for Printshop.

☐ **BAD-BAD (289)** - Naughty adventure game. CGA required.

☐ **ASTRO-[bleep] (297)** - Arcade game. CGA req.

☐ **STRIP BLACKJACK (433)** - Also contains x-rated text humor. CGA required.

☐ **NASTY GIRL (435)** - The name says it all.... CGA required.

☐ **X-RATED DIGI-PICS (436)** - Some lovely ladies are automatically scanned. CGA required.

BUSINESS

☐ **EZ-FORMS Rev. C.24 (66)** - Menu driven forms generator, many skeleton forms.

☐ **EASY PROJECT V1.2 (440)** - Complete project management system. Excellent.

☐ **REAL ESTATE ANALYST (83)** - Menu driven, mortgages, interest, etc.

☐ **PERSONAL FINANCE MGR V3.0 (68)** - Checking & savings accounts, etc.

☐ **SHARE-TAX/1040 V 87.1 (434)** - Does 1987 computation & prints out tax returns.

☐ **BUSINESS LETTERS (303 & 304)** - (2 disk set) 650 types of business letters.

☐ **MR. BILL V3.2 (311 - 312)** - (2 disk set) Time & billing package. Products or services.

☐ **ESTIBID (313 - 317)** - (5 disk set) Estimating program for manufacturers & contractors.

☐ **RENTAL PROPERTY (318)** - Keeps track of rental activity. Archived files.

☐ **SLICWORKS (321)** - Framework clone. Database, spreadsheet, word proc., & comm.

☐ **SALESEYE V 2.3 (443)** - Sales and business contacts program.

☐ **CASELOAD V1.3 (447)** - Lets attorneys have current status reports of individual caseloads.

☐ **FINANCE MANAGER V4.0 (77)** - Accounting package for business or personal finances.

☐ **SOAR V1.92 (449 & 450)** - (2 disk set) Accounts receivable program.

COMMUNICATIONS

☐ **QMODEM V3.1 (293 & 294)** - (2 disk set) Good full featured modem program.

☐ **PROCOMM V2.42 (53 & 54)** - (2 disk set) Menu driven, still one of the best.

☐ **EQUAL PARTNERS V1.11 (418)** - Transfer data from 5.25 to 3.5 systems via a serial port.

DATABASE

☐ **FILE EXPRESS V4.01 (33 & 34)** - (2 disk set) Menu driven, easy to use database package.

☐ **WAMPUM V3.1 (37 & 38)** - (2 disk set) Menu driven dBase III clone. Knowledge of Dbase suggested.

☐ **PC-FILE + V2.0 (493/495)**-(3 disk set) Full featured database; help screens, menus, etc.

☐ **DBASE III PROGRAMS (348)**- Genealogy, Disk cataloging & more. DBASE III required.

☐ **DBASE III UTILITIES (349)** - Misc. programs & utilities. DBASE III required.

EDUCATION

☐ **PIANOMAN (4 & 5)** - (2 disk set) Makes your PC a music synthesizer, contains tunes.

☐ **FASTYPE V2.1 (120)** - Typing tutor from beginner to advanced. CGA required.

☐ **BEGINNING SPANISH (121)** - Vocabulary, phrases, & words. Basic required.

☐ **THE WORLD (127)** - Display maps of the world. CGA required.

☐ **FUNNELS & BUCKETS V 2.0 (130)** - Great learning game for kids. Ages 5 - 10.

☐ **ERYN'S ABC'S (131)** - Teaches alphabet & numbers. Ages 2 - 6. Basic required.

☐ **AMY'S FIRST PRIMER (133)**- Alphabet, Numbers, etc. Ages 4 - 8. CGA & Basic required.

☐ **POLYGLOT V6.01 (139)** - Vocabulary builder. Grades 7 - college. Excellent.

☐ **ANIMAL MATH (181)** - Count objects, add, subtact. Ages 4 & up. CGA required.

☐ **HANGMAN (91)** - Choose your level of play.

☐ **MATHWHIZ (188)** - Teaches various math operations. Ages 5 & up. Basic required.

EGA PROGRAMS

☐ **EGA RISK (216)** - The game of world domination. Also contains EGA Roids.

☐ **EGA UTILITIES/1 (260)** - EGA palette setting, change fonts & size of letters, etc.

☐ **EGA DEMO PROGRAMS (353 - 358)** - (6 disk set) Misc. self-running demo programs.

GAMES

☐ **SLEUTH V4.1 (89)** - Murder mystery game similar to the board game "CLUE".

☐ **BLACKJACK (95)** - Advanced blackjack game with tutor, multiple players. Great for Vegas.

☐ **MONOPOLY V6.7 (106)** - Just like the board game, 2 to 4 players. CGA required.

☐ **DUNGEONS & DRAGONS V1.1 (205)** The Classic Game. Can you survive?

☐ **LAS VEGAS (116)** - Craps, Roullete, Poker, & more. CGA req., Basic on some.

☐ **3D CHESS V1.01 (215)** - Excellent chess game. Switch between 2D & 3D.

☐ **SAM SPADE V1.0A (226)** - Great detective game. Also contains Mazegame; creates mazes.

☐ **SOLITAIRE (211)** - 4 games. CGA required.

☐ **SUPER PINBALL (212)** - 5 games. CGA req.

☐ **WORDPLAY (367)** - Wheel of Fortune clone. Has everything but Vanna and Pat. CGA req.

☐ **MAHJONG (407)** - Fascinating Oriental card game. CGA required.

GRAPHICS

☐ **HIRES RAINBOW V1.0 (64)** - Full featured paint package. CGA required.

☐ **PRESENTATIONS V2.0 (446)** - Make demo programs & presentations.

☐ **LIGHTING PRESS (266)** - Printmaster Plus clone, flyers, greeting cards, graphics, etc.

☐ **CALENDAR CREATOR (350)** - Create & print your own monthly calendar of events.

☐ **PRINTMASTER GRAPHICS (319)** - 3 librs. of graphics for Printmaster Plus. Over 100.

☐ **PRINTSHOP GRAPHICS (320)** - 3 more libraries of graphics for Printshop. Over 100.

☐ **STREETS ON A DISK (437)** - **DEMO** Program. Map of LA county. CGA or EGA req.

☐ **TROPICAL FISH (427)** - An aquarium on your computer screen. CGA required.

☐ **DANCAD 3D V2.0B (424 & 425)** - (2 disk set) Advanced 2D/3D drafting program. CGA, 2 drives and 640K required.

☐ **CAD CURVE DIGITIZER (339 &340)** - (2 disk set) Excellent CAD program. CGA or EGA required. **Hercules mono version (disk #'s 351 & 352).**

LANGUAGE

☐ **"C" TUTOR (22 & 23)** - (2 disk set) 14 lesson tutorial, learn to program in 'C ' language.

☐ **"C" LANGUAGE V2.1 (299 & 300)** - (2 disk set) Complete programming environment. Source, compiler, samples.

☐ **BASIC TUTOR (325)** - Learn to program.

☐ **TURBO PASCAL TUTOR (20)** - 17 lesson tutorial with samples, etc.

MISCELLANEOUS

☐ **STRESS & SHRINK (74)** - Stress - stress test. Shrink - personality analysis.

☐ **HORSERACING (343)** - Handicapping for thoroughbreds.

☐ **ASTROLOGY (155)** - Horoscope & Astrology programs. 1 requires Basic.

☐ **RECIPE MANAGER V1.1 (156 & 157)** (2 disk set) Recipe management system.

☐ **LOTTO (159)** - Advanced techniques to win big bucks. $$$.

☐ **FREEWILL V1.0 (171)** - Valid WILLS for Calif.

☐ **FASTBUCKS (191)** - Menu-driven home finance package. Easy to use.

☐ **BIORHYTHM (194)** - Calculate & print your own monthly charts.

☐ **TENANTS RIGHTS (196)** - The 'Bible' for California renters. **A MUST.**

☐ **MEALMATE (332)** - Nutritional database for meal planning.

☐ **LITTLE BLACK BOOK (441)** - Creates pocket sized address book.

PRINTER UTILITIES

☐ **IMAGEPRINT V1.2 (44)** - Makes 9 pin Epson compatible printers do letter quality print.

☐ **LASERJET FONTS (327)** - Over 30 downloadable fonts for the Laserjet Plus/II.

☐ **LASERJET FONTS/UTILITIES (328)** - More fonts & a utility to capture graphic screen images from other programs. Also contains 'Pamphlet'.

SPREADSHEET

☐ **LOTUS 123 PROGRAMS (28 - 32)** - (5 disk set) Contains as many applications and utilities that we could find. Requires Lotus 123 .

☐ **LOTUS 123 TUTOR (177)** - Beginning tutorial for Lotus 123. Requires Lotus 123.

☐ **AS EASY AS V3.0 (302)** - LOTUS clone. 52 column sheet, graphing. CGA required.

UTILITIES

☐ **DISK COMMANDO V2.0 (218 & 219)** - (2 disk set) Norton's Advanced Utilities Clone.

☐ **SIM-CGA (220)** - Great for most programs that need color (CGA) to run.

☐ **DOS HELP (255)** - Help screen for DOS commands & functions. For DOS 3.XX.

☐ **DOS TUTORIAL V4.2 (256)** - Menu driven tutorial that teaches DOS commands. A MUST.

☐ **BEGINNERS (257)** - The basics of using most public domain/shareware software.

☐ **PC MAGAZINE (277)** - Over 30 great utilities, rated by PC magazine.

☐ **LIST V6.2A (274)** Replace DOS 'TYPE' command. Best utility for viewing PD Documentation.

☐ **AUTOMENU V4.01 (280)** - Access programs, batch files, etc. from one easy menu system.

☐ **POWERMENU (419)** - Xtree & Sidekick clone rolled into 1. Hard drive required.

WORD PROCESSING

☐ **SIDEWRITER (6)** - Just like the commercial program SIDEWAYS. Great for Lotus 123.

☐ **RELIANCE MAILING LIST V2.0 (161)** - Easy to use, menu-driven, labels, mail-merge, etc.

☐ **PC-WRITE V2.71 (9 & 10)** - (2 disk set) Full featured word processor, spelling checker, on-line help screens.

☐ **LETTERHEAD (69)** - Create & print your own letterhead on letters or envelopes. Epson or IBM compatible printer required.

☐ **PC TYPE + (373 - 375)** - (3 disk set) A powerful word processor with full screen editing, etc.

ORDER FORM

____	____	____	____	____	____
____	____	____	____	____	____
____	____	____	____	____	____

NAME______________________________
ADDRESS___________________________
CITY_______________ST___ZIP_____
PHONE (___) _______________

Minimum order 3 disks.
1 **FREE disk for every 10 ordered**

# of disks_____@ $2.99 = ________
Calif. Sales Tax (6.5%) = ________
Shipping & Handling = 2.00

TOTAL = $________

Mail order form & check or money order to:

PC Plus Consulting
1466 Springline Drive
Palmdale, CA 93550

(805) 273-0300

Call or write for free catalog.

We are open M-Sat, 9 am - 5 pm.

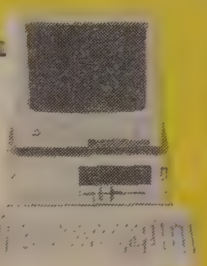
Available on 3.5" media - $3.99 ea.

We do not accept VISA, MC or COD's.

Step Into A World Of Savings

LEADING EDGE

LEADING EDGE



2 Drive System	$850
1 Drive, 20 MEG System	$1050
1 Drive, 30 MEG System	$1095

ALL SYSTEMS INCLUDE MS DOS, GW BASIC & MANUALS

COMPAQ®

Deskpro

286 20 MEG	$2297
40 MEG	$2497
386 40 MEG	$4595
70 MEG	$5495
130 MEG.	$6450
Portable 20 MEG	$3650
40 MEG	$4250

ALL OTHER MODELS—CALL

IBM

Model 30-002	$1275
Model 30-021	$1715
Model 50-021	$2728
Model 60-041	$3975
Model 60-071	$4723
IBM AT 068/339	CALL

WE WILL TRY TO BEAT ANY PRICE!

AST Premium 286

RESEARCH INC.

w/20 MEG	$1850
w/40 MEG	$1995

Systems come complete with DOS and operation manuals.

*NEC MULTISPEED

PORTABLE COMPUTER

4.77/10MHz switchable (NEC V-30 chip) 640K RAM dual 3.5″ 760K drives S twist LCD, 640Kx200 resolution built-in, pop-up firmware DOS 3.2

EL...$1595

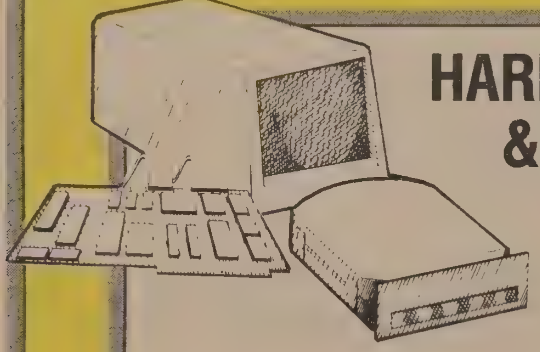
HD...$2395

TOSHIBA PORTABLE

T1000	$850
*T1200	$2250
*T3100-20	$2999
*Zenith Portables	CALL

*Internal 1200b modem for above laptops $219

*Internal 2400b modem for above laptops $299



HARD DISKS & DRIVES

CALL FOR LATEST PRICE

20 MEG HARD CARD	$395
TEAC 360 K DS/DD	$99
Toshiba 360K DS/DD	$99
Fujitsu 360K DS/DD	$89
Seagate 225-20MB H/H w/controller	$279
Seagate 238-30MB H/H w/controller card	$309
Seagate 4026 20 MEG	$475
Seagate 4038 30 MEG	$529
Seagate 4051 40 MEG	$689
Seagate 4096 80 MEG	$750
FUJI Hard disks w/controller (3½″ technology low-power)	
20 MEG	$395
30 MEG	$450
Miniscribe Hard Drives	$CALL

All tape backup units including Irwin, Teac, Archive

PRINTERS

LX800	CALL
New Epson FX86	CALL
New Epson FX286e	CALL
Epson LQ850	CALL
Epson LQ1050	CALL
Epson EX800	CALL
Epson EX 1000	CALL
Okidata 292 enhanced	545
Okidata 293 enhanced	695
Okidata 294	1095
Toshiba P 321 SL	535
Toshiba P 341	795
Toshiba P 351	945
Citizen MSP 10	260
Citizen MSP 15	339
Citizen MSP 20	CALL
Citizen MSP 40	315
Citizen MSP 55	471
Citizen 120D	160
Citizen Premiere 35	439
Citizen Tribute 224	635
Citizen Overture 110	1689
6′ Parallel Printer Cable	15
Universal Printer stand	19

MONITORS

Princeton Graphic Monitors	$CALL
Taxan (All models)	CALL
IBM Monochrome	CALL
IBM Color	CALL
Compaq Dual Mode	229
NEC Multisync II	575
Sony KB-1311 CR (combination TV & RGB 640x200 monitor)	450
Samsung Amber	79
Samsung RGB	259
Samsung EGA	379
Thompson 14″ Amber	169
Thompson 14″ RGB	249
Thompson 14″ EGA	349
Thompson 14″ Ultrascan	495

MODEMS

Hayes 1200B internal	$349
Hayes 1200 external	389
Hayes Compatible	
1200b internal modem	89
1200b external modem	129
2400b internal modem	169
2400b external modem	199

Hewlett Packard Laser jet II w/toner cartridge

$1650

All prices subject to change without notice

(213) 618-8864

FAX: (213) 618-8543

ALL SALES ARE FINAL
NO RETURN WITHOUT AUTHORIZATION NUMBER
ALL UNAUTHORIZED RETURNS SUBJECT TO 25% RESTOCKING CHARGE
3% charge on all C.O. D. orders
3% shipping and handling
(minimum $5 s/h on all shipped orders)

COMPUTER SYSTEMS

8088-1 XT

- Compatibility - by far the best and most compatible bios. We guarantee that MS-DOS software will operate flawlessly; Lotus, Symphony, Flight Simulator, Wordstar 200 , Word, DBase, RBase, the list goes on and on. . .
- One high quality 360K floppy drive. (Our head technician checks each one.)
- Turbo speed - 10 MHz or 4.77 MHz keyboard or software selectable.
- FREE monochrome monitor with Hercules-compatible graphics card.
- 256K memory (You can upgrade to 640K on the motherboard.)
- Slot for 8087 math co-processor.
- 1 parallel printer port
- AT-style keyboard
- 8 expansion slot motherboard
- Continuous and heavy duty 150 Watt power supply
- Key lock for security
- Turbo light - No guessing! If it's green, it's Turbo
- Modern styling
- FCC Class B approved

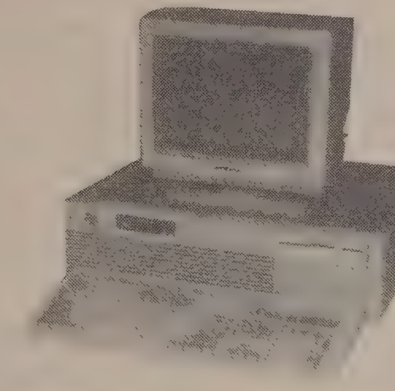
$495

COMPUTER SYSTEMS

386

- 8/16 MHz, no wait state (Upgradeable to 20 MHz)
- Compatibility - by far the best and most compatible bios. We guarantee that MS-DOS software will operate flawlessly: Lotus, Symphony, Flight Simulator, Wordstar 2000, Word, DBase, RBase, the list goes on and on. . .
- 1024K memory - High quality pre-tested chips (640K base; 384K extended), with up to 4MB on the motherboard.
- Battery backed up clock calendar
- 1 parallel port
- 1 serial port (second port $20 additional)
- 8 layer motherboard
- 8 FULL expansion slots
- Enhanced keyboard
- High-resolution monochrome monitor with a tilt and swivel base. Hercules compatible.
- 1.2MB floppy drive
- 3 half-high internal device slots
- 2 half-high internal device slots
- 200 watt power supply
- FCC approved

$1995



COMPUTER SYSTEMS

286

- 10 MHz
- Compatibility - by far the best and most compatible bios. We guarantee that MS-DOS software will operate flawlessly: Lotus, Symphony, Flight Simulator, Wordstar 2000, Word, DBase, RBase, the list goes on and on. . .
- 8 expansion slots to fill all of your expansion needs
- Turbo light - No guessing. If it's lit, it's Turbo
- 512K memory - High quality pre-tested chips (upgradeable to 1 MB on the motherboard.)
- FREE amber monitor and Hercules compatible graphics card.
- High resolution graphics - both the monitor and display card are Hercules compatible.
- We even give you a tilt and swivel based monitor for your comfort.
- One high quality floppy drive. 1.2 Meg or 360K. (Our head technician checks each one.)
- 200 Watt power supply
- AT style keyboard with 10 function keys
- 1 parallel port
- Slot for math co-processor 80287
- A clock calendar for automatic time and date with battery backup.
- FCC Class B approved.

$995

OPTIONS

(Sold with complete system)

EGA exchange with EGA monitor and special EGA card monitor and 132 column card 640 x 350 resolution. . .$499.95
Multisync style multiscan w/monitor and 132 col. card. . .$699.95
CGA exchange complete with CGA card and monitor. . .$250.00
(EGA, CGA and Multisync exchange replaces monochrome card and monitor.)
8087 or 80287 math coprocessor. . .$CALL
Enhanced 101 keyboard. . .$25.00
DOS 3.3. . .$89.00
Mouse. . .$79.95
300/1200 baud modem w/ software. . .$79.95
2400 baud modem w/software. . .$159.95
360K floppy disk drive. . .$89.00
3½″ floppy disk drive. . .$135.00

Software World

(213) 618-8864

FAX: (213) 618-8543

20655 S. Western #104
Torrance, CA 90501

new CD-ROM drive for the Macintosh and announced that it expects the drive to help spur interest in *HyperCard*. The drive, called the CD SC, attaches to the Macintosh through the high-speed SCSI connector or to an Apple II through an add-in SCSI connector. To speed sequential data access from the drive, Apple included a 64K RAM buffer in the drive. Unlike many of the CD-ROM players available for the IBM PC, the CD SC allows you to put the CD-ROM disks in the front of the drive, meaning that other devices (such as a Mac) can be stacked on top of the drive. The drive will be compatible with the High Sierra file format later this year, giving users access to many of the titles already available on CD-ROM drives for other computers.

The CD SC will also be compatible with AppleShare so that many users on a network can access the data in the drive from their own computers. The CD SC can also play standard audio CDs, so you can use it as a musical device when you are not using it for reading data. The drive comes with jacks for external amplifiers and speakers, and has a headphone jack for personal listening. It will come with a desk accessory that lets users play the drive in audio mode while they are using their Macs for other tasks.

Apple said that this will help sell the CD SC into the educational market where Apple already has a strong foothold. At the same time as it announced the CD SC, it also announced a server card that allows Apple IIs to be part of an AppleTalk network. Although there has not been much business demand for this, the educational market has been pressing for an Apple networking solution to the tens of thousands of Apple IIs that are used by school systems. Since the CD SC can be shared over an AppleShare network, a school with networked Apple IIs and Macs can share the CD SC among many computers. Apple hopes that this will lead more schools to buy Apple IIs, since it will now be easier for school administrators to connect the systems and share expensive devices.

The drive will cost $1,199 and will be available in May. A version of *HyperCard* which can read from the drive will also be available at that time. The capability to read High Sierra disks will not be available until later in the summer, according to Apple. Other products for the CD-SC, such as the *Grolier Electronic Encyclopedia*, were also announced at the CD-ROM conference.

RIPS Signs PostScript License With Adobe

Raster Image Processing Systems (RIPS) signed an agreement with Adobe allowing RIPS to distribute PostScript with its laser printer controller boards. The agreement is for a paid-up, royalty-free license to PostScript and allows RIPS to describe its page description language as compatible with the PostScript interpreter. In its announcement, however, RIPS president Lynn King stated that "We feel it's important to maintain the integrity of the PostScript language standard, although we don't recognize Adobe Systems' right to copyright the PostScript language command set." RIPS markets boards which allow laser printers to print PostScript documents. Its boards, which can reside either in a PC or in the laser printer itself, run at up to 30 times as fast as standard PostScript printers, and averages at least 10 times faster, due to RIPS proprietary chip technology. RIPS markets its boards to printer manufacturers and resellers. RIPS, 303/530-2910.

Virus Mania

Computer viruses have become the biggest computer news item in the non-computer press in the last few months. A computer virus is a small program which acts like a biological virus: they reproduce themselves and are often undetected by the host (usually a disk). Some of the reports started last fall when an MS-DOS virus that erased disks was found at Lehigh University. More recently, a Macintosh virus that displayed a message of peace has made headlines across the country.

Now people are selling and giving away programs that help detect and kill computer viruses. However, many computer security experts question the use of these programs, since there are dozens of ways that a virus can be placed in a computer and, since they have only recently become popular, people inventing the viruses have barely started showing their expertise in developing "clever" viruses. In fact, one program that supposedly helped rid computers of viruses contained a virus itself, placed there by someone other than the program's author. In another case, a supposedly harmless virus was accidentally distributed by a commercial software company in one of its products.

Although there have been no known widespread instances of destructive viruses, it is unlikely that people will know about them until it is too late. Many viruses show their presence at a pre-defined date or after a person has performed a specific action a certain number of times. When a distinctive virus does attack the computer market, it is likely to bring another round of articles in the newspapers since so much information is now stored on personal computers.

Apple Looking To Become A $10 Billion Company

While Apple is moving towards its first $5 billion sales year within the next two years, its top brass is looking at what kind of company it will be when

XT-TURBO

MONO: **$470**
COLOR: **$650**
EGA: **$825**

4.77/8 MHz Turbo M. Board
256K on Board
360K Floppy Drive
150W Power Supply
Case
5060 AT/XT Key Board
Floppy Disk Controller
Video Card
Printer Card
Monitor

AT-TURBO

MONO: **$939**
COLOR: **$1119**
EGA: **$1299**

6/10 MHz AT M. Board
512K RAM on Board
1.2M Floppy Drive
200W Power Supply
Case
5060 AT Key Board
WA2 Card
Video Card
Monitor

LOCAL AREA NETWORK Card	CALL
EGA/Printer/Serial Card "640x480"	140
4 Serial Card (II option)	75
2.5M RAM Card	70
1.2M FDC Card	35
AT Multi I/O Card	50
Multi User Card	79
MGP Card	42
CGP Card	42
RS 232 Card	21
Game Card	16
Printer Card	16
Buffer Printer Card	60
AD/DA Card	70
576 RAM Card	27
Logic Tech Mouse	72
1200B Smart 1 Modem	72
1.2 Multi I/O Card AT/XT	75
Joystick	17
1200B-Modem	66

P.C. HOME
SKYPARK CIRCLE
IRVINE, CA 92714
(714) 261-8730

EXCEL COMPUTER, INC.
4124 ROSEMEAD, STE. A
ROSEMEAD, CA 91770
(818) 309-9986

12 Yrs. In Orange County

"USER FRIENDLY DEALER"

Concord Computer Products

*Division of Concord Electronics

APPLE
IBM
LEADING EDGE
REPAIR FACILITY

714-632-6790 • 800-435-0907

Quality Without Cutting Corners

SPECIAL SALE ITEMS

LEADING EDGE MODEL D . $749
Includes: 512K Memory (expandable to 768K); TTL HiRes Monitor; Par/Ser Port; RGB or Mono Output; Keyboard; MS/DOS/GW Basic; Clock
1200 BAUD MODEM. $49

THIS MONTH ONLY

AT Turbo Bare Bones System

- 6/10 MHz Motherboard w/BIOS
- Assembled in case
- 200 Watt Power Supply
- Fully tested & burned in
- Complete the system yourself.

$649 w/ 512K

Low Cost AT Turbo 10 MHz

- Japanese RAM
- 6/10 MHz
- Battery/clock/calendar
- TEAC Drive
- 20 MB Seagate Drive
- Western Digital Controller
- 200 W Power Supply
- Herc. compatible graphics card
- Hi-res. TTL Monitor
- Parallel/printer port
- Keyboard
- Cabinet
- Free Training
- 1 Year Limited Warranty

FREE SURGE UNIT WITH CASH PURCHASE

$1275 w/ 512K

XT 10 MHz COMPATIBLE SYSTEM

- 640K on Mainboard
- 4.77/10 MHz
- 8 expansion slots
- Floppy Drive w/ controller
- Herc. comp. graphics card
- 150 Watt Power Supply
- Hi-res monitor
- AT Style Keyboard
- Mini AT Case w/ Lock & Reset Button
- 1 Year Limited Warranty

$649

FREE SURGE UNIT WITH CASH PURCHASE

XT Turbo System

- 640K on Mainboard
- 4.77/8 MHz
- 8 Expansion Slots
- Floppy Drive w/ controller
- Hercules Compatible Graphics Card
- 150 Watt Power Supply
- Hi-Res Amber Monitor
- Mini AT Case w/ Lock & Reset Button
- 1 Year Limited Warranty

$625

FREE SURGE UNIT WITH CASH PURCHASE

2910-B E. La Palma Ave.
Anaheim, CA 92806

COME IN OUR STORE! OVER 500 PRODUCT ITEMS IN STOCK!

Terms: Mastercard, Visa, C.O.D. Prices subject to change without notice.

Get The Be$t
For Le$$
at Valerio!

Always Complete Systems at the LOWEST Prices!

NEW

Complete 80386 System

$2099

THIS COMPLETE, READY-TO-RUN SYSTEM Includes:
16/8/6/4.77 Mhz, 0 wait state, 80386-16 motherboard; (U.S. mfg.); 1 MB high-speed static column RAM installed; expandable to 10 MB; Phoenix 386 BIOS; 1.2 MB Floppy Disk Drive; Western Digital WA-2 Hard/floppy controller; 250 Watt, U.L. listed power supply; Hercules comp. monographics card with printer port; Thomson 15″ dual-frequency (CGA/MGA) amber monitor; AT Deluxe case (space for 5 half ht. drives, RESET/TURBO buttons, RESET/HDD/TURBO LEDs): KEYTRONICS enhanced 101 mechanical-tactile keyboard.

MONITOR INCLUDED!

Complete 8088 System
(30 MB)

$1195

Includes: 4.77/10 MHz; 640K RAM on board; ONE 360K Fujitsu floppy drive; 150 watt power supply; Monochrome/graphics card; TWO Parallel ports; ONE Serial Port (second optional); ONE game port; A slot for a math co-processor chip; clock/calendar; XT slide in case; AT enhanced keyboard.
FREE AMBER TTL MONITOR WITH SWIVEL AND TILT
30 MB Fuji Hard Disk w/ Western Digital RLL Controller
FREE CITIZEN PRINTER (120D) w/ printer cable

Complete 80286 System
(40 MB)

$1545

Includes: 6/10 MHz (80286-10 CPU); 1 MB RAM on board; ONE 1.2 MB Fujitsu floppy drive; 200 Watt Power Supply; Monochrome/graphics card; TWO parallel ports; ONE serial port (second optional); ONE game port; A slot for a math coprocessor chip; on board clock/cal; AT case w/ LED buttons; AT enhanced keyboard.
FREE AMBER TTL MONITOR W/ SWIVEL & TILT
40 MB Miniscribe 3650 Hard Disk w/ Western Digital WA2 Controller
FREE Citizen 120-D Printer w/ printer cable
Options:
ST 251 40 MB Hard Disk (39 ms) . . . . **add $140**
ST 251-1 40 MB Hard Disk (28 ms) . . . . **add $170**

FREE
SURGE PROTECTOR
with the purchase of ANY system

1 YEAR WARRANTY
Parts & Labor
with all systems

FREE
STARTERS KIT
with the purchase of ANY system (diskettes, paper, software, etc.)

Improve your present system with these options

COLOR UPGRADE
(640 x 200) .add $**175**
EGA UPGRADE
(640 x 350) .add $**385**
Multisync upgrade
(800 x 650) .add $**625**
20 MHz System upgrade . . . .add $**200**
360 Kb Floppy disk drive . . . . . . .add $**65**
1.44 MB 3.5″ floppy (PS-2 comp.) add $**110**
ST-251 40 MB Hard Disk (39 ms).add $**415**
ST-251-1 40 MB Hard Disk (28 ms).add $**445**

DEALERS AND CONSULTANT INQUIRIES WELCOME

FINANCING AVAILABLE

Always Complete Systems at the LOWEST Prices!

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

VALERIO ENTERPRISES
18341 Sherman Way Ste. 104-F
Reseda, CA 91335

(818) 343-1038
(818) 609-0535

it is selling twice that amount. Chief Financial Officer Deborah Coleman said that Apple sees the day when its sales will make it one of the largest computer (not just microcomputer) companies in the U.S. She said that Apple is looking at expanding its manufacturing capabilities here and abroad and looking at manufacturing some of the components that it now buys from other manufacturers.

IBM Renegotiates Rights To Token Ring Technology

Due to many people using IBM's Token Ring networking boards in non-IBM computers, IBM has renegotiated its license to the technology with the inventor, Olof Soderblom. Soderblom's company, Willemijn Holdings BV of Rotterdam, The Netherlands, holds the patents on the technology which IBM uses in its Token Ring cards. Originally, Willemijn had licensed IBM to use token ring adapters only in its own computers; Willemijn then licensed the technology to many other companies such as AT&T and 3Com. However, many people used IBM's cards in PC compatibles, so IBM had to get a new license.

QMS Buys Imagen To Widen Market

Two of the major players in the laser printer market, QMS and Imagen, are combining into one company in order to market laser printers through the entire range of prices. QMS, mostly known for its inexpensive and mid-range printers, is buying Imagen, well known in the high end of the market, in exchange for QMS stock. The combination will give QMS a much better marketing position in companies which already own Imagen printers and now need to buy lower-cost printers for other purposes. QMS, 205/633-4300.

Borland Announces SideKick Plus With New Memory Management

Responding to the pleas of PC users not to take any more of their RAM memory, Borland released its new resident utility package, *SideKick Plus*. Although it has many more features than the best-selling *SideKick*, it takes up a smaller amount of RAM due to its ability to swap parts of the program in and out when needed, and it can take advantage of extra RAM in systems that follow the LIM expanded memory specification. The new product costs $199.95, significantly higher than the original *SideKick*. To make *SideKick Plus* more attractive, Borland will release later this year a programming package that allows developers to add program modules to *SideKick Plus*.

Apollo's New Parallel RISC Computer Called "Personal Supercomputer"

Intent on keeping up with the rapid pace of the minisupercomputer market, Apollo announced its new computer architecture, called PRISM, and said that its first entrant in the market runs 100 times faster than a VAX 11/780. The 64-bit computer is mostly aimed at the high-end scientific and design market, and the first computers in the series will cost around $100,000. Many software companies said that they intend to support the new computers by porting their software as soon as possible. Apollo's marketing appears directly aimed at Sun, responding to the favorable reviews Sun has been getting for its new SPARC architecture computers. Apollo claims that its system runs about twice as fast as a Sun 4/260. The new computer should be shipping in the fall, according to the comany.

You Can Whisper About How Good This Printer Is.

That's because Toshiba's P321SL Printer will raise your productivity, not your voice. It has a selective quiet mode and standard features you will rave, but not yell about. Taking full advantage of a 24 × 42 character matrix that's unequaled in the industry, other 24-pin printers, (not to mention any 9-pin relatives), will have to play follow the leader.

Toshiba built it because you asked for it.

"MAKE IT EASIER TO USE." Say goodbye to the DIP switches in your life with front panel selection of type fonts, pitch, emulation, quiet mode and more.

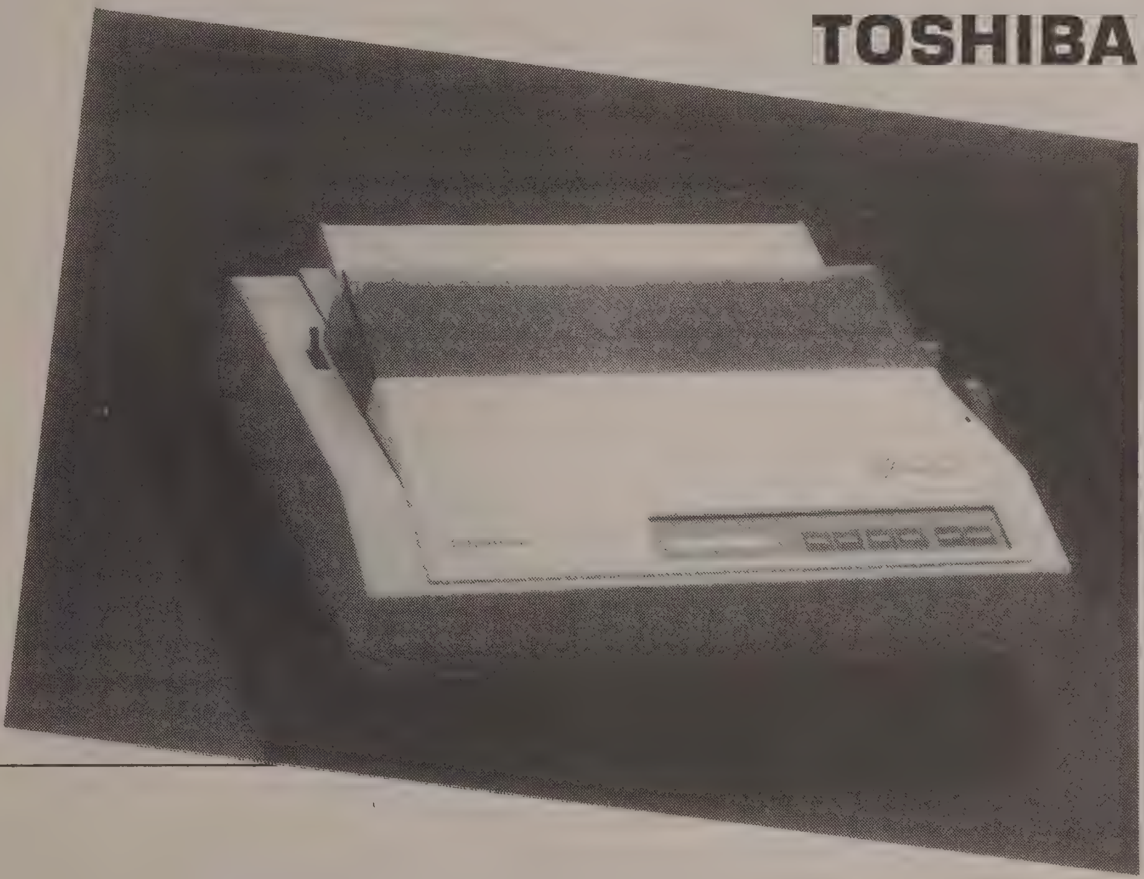
"BE SURE IT HANDLES LOTS OF SOFTWARE." The P321SL handles practically any software, so you won't have to pay extra for exotic print drives. With a finger-tip you can choose from three standard emulations: IBM PROPRINTER, QUME SPRINT 11 or TOSHIBA P351. You can create truly unique text with the selection of five resident fonts, two more via the front leading card slot and two more from disk.

"PROVIDE ENHANCED PAPER HANDLING." Forget about paper changing hassles. The fan-fold bypass feature lets you feed single sheets without pulling out the continuous form paper. Plus, with the auto-load lever you can position either type of paper quickly and precisely.

"KEEP IT AFFORDABLE." For slightly more than a 9-pin model, you can enjoy the printer you've designed yourself. The P321SL retails for $749.

"GIVE IT ATTRACTIVE STYLING." At a streamlined 16.3″W × 3.9″H × 15″D and only 17 lbs., it's the heavyweight champ pound for pound. You get great graphics with resolution as high as 180 × 360 DPI. It can also use compressed print so you can put 132-column spreadsheets on convenient letterhead size paper. Toshiba is where standard features set industry standards. Consult your nearest dealer listed below to get your printer today.

TOSHIBA



Now the printer that you designed is ready at one of the dealers listed below!

ASUCLA Computer Store
308 Westwood Plaza
Los Angeles, CA 90024
213 825-6952

Microcomputer Concepts
5921 Clark Circle
Westminster, CA 92663
714 898-3002

Americomp
114 E. Balboa Blvd., #A
Balboa, CA 92661
714 675-6664

Monarch Micro Systems
12852 Palm St., #308
Garden Grove, CA 92640
714 530-1880

NR Systems
8363 Reseda Blvd., #14
Northridge, CA 91324
818 349-9898

National Computer Specialists
6153 Fairmount Ave., #102
San Diego, CA 92120
619-584-2700

Infotech International
8210 Katella Ave.
Stanton, CA 90680
714 894-0826

MCG Enterprises
20252 Clear River Lane
Yorba Linda, CA 92686
714 970-1214

Priority One Electronics
21622 Plummer St.
Chatsworth, CA 91311
818 709-5464

BROUGHT TO YOU BY
Gates
DISTRIBUTING

RECREATIONAL/ EDUCATIONAL

Halls Of Montezuma: A Battle History Of The United States Marine Corps

By: *Roger Keating and Ian Trout*
Published by: *Strategic Studies Group (1987)*
For: *Apple II(64K)*
List Price: *$40.00*
Reviewed by: *Mike Markowitz*

Halls Of Montezuma from Strategic Studies Group is the best computer implementation of board wargaming ever published. The team of Roger Keating and Ian Trout has been perfecting the basic design for several years, through two previous games, *Battlefront* and *Battles In Normandy*. The new program is compatible with scenarios created for the two previous games.

The package includes seven battles from the history of the U.S. Marine Corps:

Mexico City — 1847. General Winfield Scott's army of 10,738 Americans (including one batallion of Marines) faces General Santa Anna defending his capital with 32,000 Mexicans. Your objective is the downtown complex of palaces and government buildings immortalized in the Marine Hymn as the "Halls of Montezuma." By adjusting a few game parameters, Montezuma has a better chance to get his revenge.

Belleau Wood — 1918. The inexperienced Fourth Marine Brigade is the last thing standing between a horde of rampaging Huns and Paris, the City of Light. As a Marine captain said at the time, "Retreat, hell. We just got here."

Iwo Jima — 1945. You won't believe how tiny this island is. This is your big chance to raise the flag on Mt. Suribachi, the volcanic cinder cone at the southwest corner. If you saw John Wayne in *Sands Of Iwo Jima*, you know how this one goes. If you haven't, you shouldn't be playing wargames.

Okinawa — 1945. One hundred thousand very determined Japanese dare you to break through their fortified lines. The weather report is cloudy, with a 100% chance of heavy typhoons. This was the Marine's biggest battle, ever.

Pusan Perimeter — 1950. The First Marine Brigade counterattacks the over-extended North Koreans. Definitely not another episode of *M.A.S.H.*

Inchon — 1950. Crazy Doug MacArthur's brilliant flanking maneuver; this was probably the last great amphibious assault in history. Unless the First Marine division recaptures Seoul, things look grim for the 1988 Olympics.

Hue — 1968. The Tet offensive was a military disaster for the North Vietnamese, but a brilliant propaganda success. Charlie has occupied Vietnam's ancient Imperial capital, and you have a month to take it back from him, house by house. No heavy artillery, 'cause you don't want to damage the ironically-named Palace of Peace.

The game system puts the player in the position of a two-star or three-star general commanding up to three divisions. Each division is composed of regiments, and each regiment contains several battalions, which are the basic fighting units. Battalions may be infantry, artillery, armor or one of many other specialized types. Using an intricate system of nested menus, you assign missions and resources to your units. Typical missions are attack, defend, and rest. Units ordered to attack will move toward their objective; units ordered to defend an objective will deploy to protect it.

Halls Of Montezuma is recommended for experienced players of computer wargames. The user interface is a ponderous system that accurately simulates some of the complexities of battlefield command and control. A 104-page manual includes historical notes and complete instructions for designing your own battles and battlefields. Strategic Studies Group publishes a quarterly journal, *RUN 5*, that provides meticulously researched data for creating new game scenarios. A new wrinkle in the system is WARPAINT, an icon-editor that lets you create your own terrain and unit symbols. A colorful laminated map sheet gives you an overview of all seven battlefields; this is helpful, since the screen window only shows you a small area at one time. The game is copy-protected, but it allows you to make one backup. A handy screen dump utility for some printers and in-

Factory Direct Prices . . .

XT Turbo
$475
- Mono Monitor
- 4.77/8 MHz
- 256K on Motherboard/8 slots
- 360K Floppy w/Card
- 150 Watt Power Supply
- Parallel port
- AT Style Keyboard
- Video Graphics Card
- 1 Yr. Warranty (Parts & labor)

Color: $650 EGA: $935

386 AT TURBO
MONO MONITOR
16 MHz 386 SYSTEM BOARD
1 MB RAM MEMORY & 64K CACHE MEMORY
200 WATT POWER SUPPLY
1.2 MB FLOPPY DRIVE
ENHANCED KEYBOARD (101 KEYS)
VIDEO CARD W/ PRINTER PORT
HARD AND FLOPPY CONTROLLER CARD
1 YEAR WARRANTY PARTS & LABOR
$2100
Color: $2275 EGA: $2550

286 AT TURBO
- Mono Monitor
- AT Motherboard (0 wait state board)
- Floppy Drive
- 200 Watt Power Supply
- AT Style Keyboard
- Hard Drive & Floppy Controller Card
- Video Graphics Card
- 1 Year Warranty on Parts & Labor

$925
Color: $1085 EGA: $1350

Laser Products • Print Ribbons • Computer Paper • Labels • Business Forms • Checks • Letterhead

ATTENTION: END USERS
We will meet or beat any price on any computer system in this magazine.

Computer Supplies Unlimited
Serving You Since 1983
(714) 841-3393

17931 Beach Blvd. Ste. 110
Huntington Beach, CA 92647
Near NW Corner Beach & Talbert
Look for our sign: COMPUTERS

Hours: M-F 8AM-6PM
SAT 9AM-5PM
OTHER HOURS BY APPOINTMENT

STOP BY OUR STORE OR CALL FOR UPS DELIVERY.
UPS IS OVERNIGHT IN O.C. AREA.
Prices and availability subject to change without notice.
Prices reflect 3% cash discount.

the page where you save... BIG!

CASES

XT SLIDE	24.50
AT STYLE XT SLIDE	27.00
AT BABY SLIDE	33.00
REG.SIZE AT/2 DR SLOT	46.50
AT 3 DR SLOT HORIZ LEDs	47.50
TOWER W/DIGITAL DSP/PS	290.00
TOWER W/200W PS	220.00

POWER SUPPLIES

150W XT	32.50
185W BABY AT	39.00
200W AT & 386	51.50

MOTHER BOARDS

4.77 MHZ REG.XT	53.00
4.77/8mhz Turbo	56.00
4.77/10mhz Turbo XT	61.00
REG. AT 6/12 mhz	305.00
6/10 mhz DTK AT	228.00
BABY AT 6/8/10/12 1 WS	265.00
AT 15 MHZ 0 WS SI@18.7	425.00
MICRONIC 386	1333.00
386 W/EGA/SP/PP	1500.00

BARE BONE SYSTEMS

FCC XT 8 MHZ	140.00
FCC XT 10 MHZ	149.00
FCC AT 10 MHZ	389.00
AT 6 MHZ	295.00

KEYBOARDS

5160 84 KEY XT/AT	37.00
UNITEK K151L XT/AT	36.00
84 KEY XT ONLY (K151L)	36.50
101 KEY ENH RT(5161)	40.00
KEYTRONIC 101 KEYBD	44.00
101 KEY ENHANCED	41.00

DISPLAY CARDS

CGA W/PRINTER PORT	31.00
MGA W/P. PORT (s)	30.00
MGA W/P. PORT (386)	30.00
MCGP	59.00
CGA W/OUT P. PORT	31.00
GENOA 800X600 Lvl 7	190.00
EGA 640X350 AUTO SW	97.00
EGA 640X350 NON AUTO	95.00
EGA WONDER (ATI)	170.00

EXPANSION CARDS

2.5 Meg RAM CARD FOR AT	66.00

I/O CARDS W/CABLES

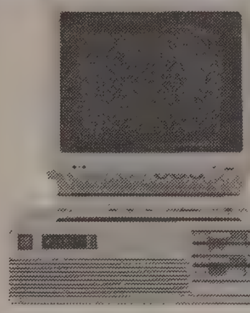
AT I/O PLUS GP/SP/PP	30.00
LONG MULTI I/O XT	35.00
PRINTER CARD XT/AT	9.00
SERIAL CARD XT	13.50
GAME CARD XT/AT	10.00

DISK CONTROLLERS

FDC W/CABLE XT 2-DR	12.00
FDC W/CABLE XT 4-DR	20.00
AT/XT FDC 1.2meg & 360	30.00
WD HD XT	66.00
WD WA2 1003 HD/FD	104.00
TW WA2 HD/FLOP (12MHZ)	100.00
RA2 HD/FD(For RLL Dr)	125.00
OMTI RLL XT 5527T	63.50
NCL HARD/FLOP.AT	103.00
30M H.D. CTRL(RLL)	64.00

FLOPPY DISK DRIVES

MITSUMI 360K	62.00
FUJITSU 360K XT	65.50
FUJITSU 360K AT	66.00
FUJITSU 1.2meg AT	78.00
TEAC 1.2meg AT	83.00
TEAC 720K FDD	78.00
TOSHIBA 3.5"720K FDD	87.00
TOSHIBA 1.44M FDD	98.00



ORDERS SHIPPED OUT WITHIN 24 HOURS.

AT 286 TURBO SYSTEM

(13 times faster than PC/XT)

- 6/12 mhz AT 286 mother board
- 512K on board (expandable to 1M)
- 1.2M Floppy Drive
- 200W Switchable Power Supply
- Reg. size AT slide case (3 LEDs & 3 sw. on panel)
- K151L XT/AT compatible keybd.

SUGG. RETAIL ~~$999.00~~

$699.00*

AT BARE BONE KIT

- 200W Switchable Power Supply
- 6/10 mhz Turbo Mother Board
- Reg.size AT Slide Case (3 LEDs & 3 sw on panel)

$339.00

* Subject to change according to current RAM chip prices

XT 20 MEG. HARD DISK SYSTEM

(3.7-4 times faster than PC/XT)

- 4.77/10 mhz mother board
- 640K memory on board
- 20M Hard Drive (ST-225) w/ctrl.
- 1 360K Floppy Disk Drive w/ctrl.
- 150W Switchable Power Supply
- AT Jr. Slide Case (3 LEDs & 3 Sw. on panel)
- K151L XT/AT compatible keybd.

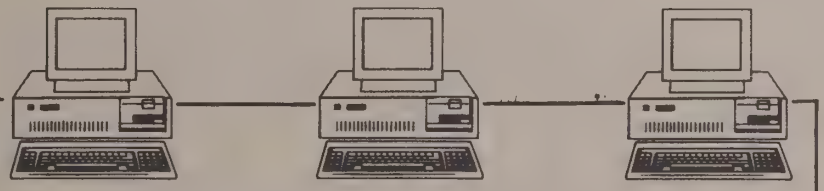
SUGG. RETAIL ~~$849.00~~

$629.00*

XT BARE BONE KIT

- 150W Switchable Power Supply
- 4.77/8 mhz Turbo Mother Board
- AT Jr. Slide Case for XT (3 LEDs & 3 sw. on panel)

$130.00



NOVELL NETWORK SYSTEM

4 STATIONS + NOVELL NETWARE PACKAGE

Server(non-dedicated):

- 12 Mhz 0 wait AT-286 System with 1 meg ram om board.
- 2.5 meg ram card w/256K on board
- 1.2 meg floppy drive w/controller
- MGA w/printer Port
- Amber monitor w/tilt & swivel base
- SMC Arcnet card
- Passive Hub
- 101 key keyboard w/tactile feel
- Hard disk drive (optional)
- Tape Back-up (optional)

$3950.00

SUGG. RETAIL:$9800.00

Workstations:

- **AT-286 Workstation w/256K memory (640K option)**
- **1 Floppy Disk Drive w/controller**
- **Monochrome Graphic Card**
- **Flat Face Mono Monitor with T/S base**
- **Keytronic 101 Key Keyboard**
- **SMC ARCNET Card**

Network Software:
NOVELL ELS NetWare 286 Level 1

DEALERS ONLY

★ ALL PRICES ARE FOR QUANTITIES OF 10 PLUS

New Business Hours:
7 AM - 5 PM PST.

HARD DRIVES

SEAGATE ST225/CTRL	259.00
ST-225 W/O CTRL	205.00
MINISCRIBE 20M/CTRL	244.00
FUJI FK309-26 20M HD	214.00
FUJI FK309-39R 30M	228.00
SEAGATE ST-251 40M HD	376.00
SEAGATE ST238/CTRL	264.00
ST-4051 AT 39ms	510.00
ST-4053 AT 28ms(FH)	529.00
ST-4096 AT 28ms	729.00
TEAC 40meg	370.00
TANDON 85M HD	759.00

MODEMS

ANCHOR PATRIOT 1200	64.50
USR 2400 MICROLINK	138.00
PATRIOT EXT 2400 Bd	167.00

PRINTERS

CITIZEN 120D	142.00
CITIZEN 180D	163.00
PANASONIC KX-P1080iM2	169.00
PANASONIC KX-P1091iM2	193.00
HP LASER SERIES II	1673.00
HP SCANNER JET	1559.00
2MB HP RAM CARD	737.00

MONITORS

PACKARD BELL AMBER T/S	67.00
SAMSUNG AMBR 1252G T/S	68.00
SAMSUNG AMBR FLAT 12SF	78.50
SAMSUNG RGB 1464W T/S	216.00
SAMSUNG RGB 1465 T/S	224.00
SAMSUNG EGA 1453M1 T/S	350.00
S'SUNG(Intec)1453M EGA	344.00
CTX 2422 EGA	349.00
NEC MULTISYNC II	584.00
M'SUBISHI M/SYNC 1371A	479.00
MITSUBA FLAT 710A	116.00

TAPE BACKUPS

ARCHIVE 40m 5240 XT	345.00
ARCHIVE 40m 5540 AT	355.00
ARCHIVE 40m XE3240 XT	464.00
ARCHIVE 40m XE 3540 AT	469.00
ARCHIVE 60m INTERNAL	480.00

MICE

LOGITECH	67.00
GENIUS	36.50

CABLES & SWITCH BOXES

AB DATA SWITCH	17.90
6'PRINTER CABLE	5.00
18'PRINTER CABLE	12.00
KEYBOARD EXTEN CABLE	3.25
MONITOR EXTEN CABLE	4.20
WA2 CABLE	3.55
SERIAL CBL 10IN-25OUT	3.00
SERIAL CBL 10IN-9OUT	3.00
SERIAL CBL (Multi I/O)	3.50

SOFTWARE

PC SOFTWARE (DOS)	77.00
PC TECHNICIAN	CALL
ELS NETWARE 286 Level 1	365.00
NOVELL ADV 286 W/KCD	1315.00
COPYII PC W/OPTION BD	87.50

OTHERS

U P S	CALL
SYSTEM STAND	9.50
ACTIVE HUB(RT-8702	282.00
PASSIVE HUB(USA)	40.00
PASSIVE HUB(Generic)	26.00
JOYSTICK (FOR IBM PC)	13.50
DISKETTE	00.45
IC KIT FOR 2nd SER.PORT/AT	11.00
IC KIT FOR 2nd. SER.PORT/XT	7.00

- Shipping charges extra.
- 1 year limited warranty.
- $100 minimum order.

WELLWAY INT'L. CORP.

1633 W. Washington Blvd.,Dept.MT-488, Montebello, CA 90640
Tel.:(213)722-5511 • Fax:(213)722-5856

- Prices & availability subject to change without notice.
- Credit card sales + 3%,$200 min.

QMD— Your Hardware Headquarters

TOSHIBA

321 SL (216 CPS)	$499
321 SL (216 CPS)	$669
351 SX/351-2 color	$999/1069
T-1000/1200	$779/2175
T-3120 MB	$3099
Modem for laptops	$295

HEWLETT PACKARD

Laser Series II	$1625
1 MB expansion HP/compatible	$349/320
2 MB expansion HP/compatible	$690/620
HP Scanjet scanner	$1275

COMPAQ

Deskpro Models	
286 1/20/40 MB	$1800/2250/2525
286 Model 40 (Factory)	$2850
386/20 MHz 60/130/300 MB	$CALL
386 40 MB	$4200
Portables	
II Model 4	$2250
II Model 2, 2 dr., 256K (80286)	$1895
II Model 20 MB	$3395
III Model 40 MB	$3950
Amber/Green Monitor	$185
VGA Monitor	$CALL
386 Memory Exp. board	$CALL
1 MB Memory Exp. kit	$489
DOS 3.3	$95

IBM

PS II Model 30-002/021	$1225/1725
PS II Model 50-021	$2689
PS II Model 60 44MB/70MB	$3729/4125
PS II Model 80 44MB/70MB	$5100/5900
Mono Display 8503	$190
Color Display 8512	$425
Color Display 8513 EGA	$525
5¼″ External Drive	$295
IBM Mouse for System II	$85
IBM Mouse for System II	$295
ProPrinter II/XL24	$390/725
ProPrinter X24	$570
QuietWriter III	$1225
IBM DOS 3.3	$90

FLOPPY DRIVES

Quantity Priced	
Fujitsu 360K/1.2 MB	$65/82
Toshiba 360K/1.2MB	$73/95
Toshiba 3.5″ Internal	$90

RENTALS

Rent computers/monitors/FAX/printers/
scanners/lasers by the week or month
(213) 312-5046

Quality Micro
Distributors
(213) 478-9811
11651 W. Pico
Los Angeles, CA 90064

terfaces helps to cut down on the need to take notes.

This game represents the ultimate evolution of the 64K Apple II wargame. The designers need to set their sights a little higher, and explore the advantages in graphics and playability that could be realized on a 128K system. (Strategic Studies Group, 1747 Orleans Court, Walnut Creek, CA 94598.)

A.I.: An Experience With Artificial Intelligence

By: *Cary Hammer*
Published by: *Scholastic Software*
For: *Apple II series (128K)*
List Price: *$14.95 each*
Reviewed by: *Mike Markowitz*

Artificial intelligence ("A.I.") is perhaps the most controversial concept in all of computer science. Some skeptics define A.I. as a fuzzy term that we apply to any advanced application that a computer can't do very well yet. The term has been applied to such diverse areas as natural language "understanding," robotics, expert systems and pattern recognition.

Generally speaking, an "intelligent" system should have some means of acquiring information from the outside world, some kind of goal-directed behavior, and some way of "learning" from experience in order to improve its performance. (I am grateful to the brilliant Russian cyberneticist Henry Firdman for this definition . . .) In academic circles, research on A.I. until recently was pretty much confined to highly specialized machines running LISP, a bizarre language that consists largely of parentheses. A new program from Scholastic Software demonstrates that useful and instructive A.I. capabilities can be implemented on our familiar little Apple II.

A.I.—An Experience In Artificial Intelligence is intended for computer classes in Grade 5 and up. It demonstrates applications of pattern recognition and decision theory in the form of a "machine" that learns to play simple games without being told the rules.

The games are generalized versions of Tic-tac-toe or Go-moku. Human and computer alternately place markers on a game board. You can define a square grid of any size from 3 × 3 up to 6 × 6. You can define up to four different winning patterns. A "winning pattern" can be several markers in a row, column or diagonal, or it can be more complex, like a cross, diamond or triangle. It can even include enemy markers as part of the pattern.

Each computer pattern-recognizer is called a "Brain." As you play successive games, you are actually programming a Brain. Several Brains are provided with the program disk, and you can save your own Brains on specially formatted 5.25" disks ("Brain Banks").

A.I. uses icons and graphics very creatively to clarify what could otherwise be difficult concepts. An "eye" symbol next to a number on the control panel represents "Foresight" — the number of turns ahead for which the Brain computes its options. As a Brain makes deeper plans you can see the quality of its play increase, but the program slows down dramatically. *A.I.* runs significantly faster on the IIGS, but I did not have a chance to test it with an accelerator card.

Only a few keys are needed to control the game — arrows, spacebar, return, escape and Control-S (to toggle the sound effects). A superb 112-page manual is organized into a series of ten Explorations (tutorials) and an extensive reference guide. There is a detailed but non-technical explanation of how the program works. The quality of the writing is a model for educational software — it never talks down to the user, it discusses the implications of important ideas, avoids excessive jargon, and uses graphics effectively. A four-page quick start guide provides the bare necessities of information for users who can't wait to jump right into the program.

The designer and programmer, Cary Hammer, describes himself as a "freelance software designer . . . who subsists mostly on bagels and Chinese food, and lives in the narrowest apartment in New York City." Other writers of educational software should study his work. *A.I. — An Exploration Of Artificial Intelligence* belongs in the software library of every school that has an Apple II with 128K. It is the kind of software that could spark the imagination of some twelve-year old today who will do great things in the twenty-first century. (Scholastic Software, 730 Broadway, New York, NY 10003 (212) 505-3000.)

RSVP

By: *Deborah Kovacs and Frieda Lekkerkerker*
Published by: *Blue Lion Software (1987)*
For: *Apple II series (128K), Commodore 64/128 and IBM PC (128K and Hercules or CGA card)*
List Price: *$39.95*
Reviewed by: *Mike Markowitz*

RSVP is a tutorial on etiquette, pleasantly disguised as a game. It is a well-mannered program that begins by asking your name. You can choose between "game" and "practice" modes, and as a courtesy to others, you can even turn the sound off.

Categories include telephone manners, introductions, invitations, business meals, table manners, dress, correspondence and related topics. Countries include Australia, Belgium, Brazil, China, Egypt, France, Germany, Great Britain, In-

ACCOUNTING SYSTEMS

Hardware

- AST and Packard Bell computers
- Panasonic and NEC printers

Complete Systems including:
Hard drive computer, monitor, printer, MS DOS, accounting software, EZ menu, all cables, surge protector, and disks.
Starting at just $1979

Digital Data Designs
2780 Sepulveda Boulevard Suite 117, Torrance, CA 90505

Software

SBT Database Accounting Library
- 13 modules to choose from
- Multiple company capability
- Can be customized to your specific needs

Bedford Integrated Accounting
- Fully integrated
- Easy to learn and use

Custom dBase/Clipper
Programming Available
(213) 326-8917

The Diskette Company

100% ERROR FREE · LIFETIME WARRANTY · U.S. MAJOR MANUFACTURER

5¼″ DS/DD

- **100% ERROR FREE**
- **LIFETIME WARRANTY**

25¢ EACH DISK

QTY. 200

4¢ TYVEX SLEEVES
2¢ PAPER SLEEVES
1¢ COLOR CODED LABELS

3½″ DS/DD

- WITH LIFETIME WARRANTY
- 100% ERROR FREE

$\$1^{10}$ EACH

IN PACKS OF 25
Reg. $\$1^{29}$

5¼″ DS/DD

IN WHITE BOX

33¢ EACH

DISKETTES ARE IN BOXES OF 10
Included: Anti Static Sleeves, Labels, Tabs with Hub Rings.
(Minimum 100 disks or 10 Boxes)

Lots of 350 ....30¢ each

5¼″ DS/DD OUR STANDARD PRODUCT

$\$35$ PER 100

Reg. $\$48$
IN PACKS OF 10, BOX OF 100

TYVEC SLEEVES,
COLOR CODED LABELS,
HUB RING AND TABS
INCLUDED

5¼″ DS/HD

90¢ EACH
(Minimum 30)

1.2. MB COLORED

Now in 12 Different Colors. Comes w/ Tyvec Sleeves, Labels & Tabs/in paks of 10. High Density for IBM AT and Compatibles.

COLOR 5¼″ DS/DD

UP TO 16 DIFFERENT COLORS

45¢

EACH **In paks of 10**

Inc.: Tyvec Sleeves, Color Coded Labels and Tabs. Rainbow Pack Available. Colors: L. Blue, M. Blue, D. Blue, Gray, Red, Pink, Brown, Beige, Burgundy, Yellow, White, Orange, Green, Lavender, Silver* & Gold*

3½″ DS/HD

2 MB Disks
For the IBM PS/2

CALL FOR BEST PRICE

Dysan

5¼″ DS/HD	$\$13^{95}$ box of 10

maxell

5¼″ DS/DD	$\$8^{95}$
5¼″ DS/HD	18^{60} box of 10

Verbatim – A Kodak Company –

5¼″ DS/DD	$\$7^{95}$
Teflon Protected 5¼″ DS/DD	9^{85}

BONUS

5¼″ DS/HD 1.2 MB	$\$11^{60}$ box of 11
5¼″ DS/DD	4^{90} box of 11

DATATECH

3½″ DS/DD	$\$11^{95}$ box of 10
5¼″ DS/HD 1.2 MB	9^{95} box of 10

SONY

3½″ DS/DD	$\$16^{95}$
3½″ DS/HD	44

PLATINUM

5¼″ DS/DD	$\$5^{99}$

3½″ Floppy Disk Drive

720K Capacity	$\$99$
1.44 Mb Capacity	$\$125$

ACCESSORIES

3½″ & 5¼″ Diskette Storage

DD50L Holds 50+ 5¼″ Diskettes	$\$6^{95}$
DD100L Holds 100 5¼″ Disks w/ lock	$\$8^{95}$
DD120L Holds 120 5¼″ Disks w/ lock	$\$11^{95}$
SS40 Holds 40 3½″ Diskettes	$\$6^{95}$
DD80L Holds 80 3½″ Disks w/ lock	$\$10^{95}$
DS120L Holds 120 3½″ Disks w/ lock	$\$18^{50}$
AC Surge Protector (6 outlets)	$\$9$
AC Power Pad	$\$22$
Keyboard Drawer (for PC/AT)	$\$35$
5¼″ & 3½″ Head cleaning kits	$\$3^{90}$ ea.

AMERICAL GROUP

(818) 765-3040

Fax: (818) 765-3887

SAME DAY SHIPPING DEALER & QUANTITY PRICES AVAILABLE

C.O.D., VISA, MC
Send your order with check to:
Americal Group
14200 Ventura Blvd., Ste. 201
Sherman Oaks, CA 91423
ADD $\$4^{00}$ Shipping for first 100 Disks and $\$1^{00}$ for ea. add'l. 100
CALIF. RESIDENTS ADD 6½% SALES TAX.
We accept government & educational purchase orders.

Now Accepting
VISA
master charge

dia, Indonesia, Italy, Japan, Korea, Mexico, Netherlands, Pakistan, Saudi Arabia and Spain. The material on Japan is particularly extensive, being divided into two sections — business etiquette and social graces.

In the "game" mode, you select a career — politics, big business, publishing, academia, electronics (Asia), Art & Antiques (Europe), Oil and Gas (Global) or Banking (Global). As you score points by giving correct answers, you rise through the ranks, until you reach the top of your profession.

The situations are nicely balanced between male and female roles. A little animated face on the screen makes an "oops . . ." gesture when you miss a question. Most questions are multiple choice with three options, but some require typing in an exact answer. It helps to take some notes about the people you meet, since you will be asked about their likes and dislikes later in the game. You will want to review which side of the road to drive on in various countries, know the regional food taboos, and understand what topics of conversation to avoid (politics is a no-no almost everywhere, and don't talk to Mexicans about birth control).

The graphics are simple, but effective, and the programming is smooth. *RSVP* would be an excellent party game, if your guests are polite enough to remain awake when the computer is turned on. The Apple version takes up both sides of a disk, but, regrettably, the second side seems to be copy-protected and there is no option for running with two drives. The PC version uses an irritating key-disk copy protection scheme. A twelve-page leaflet provides clear explanations of the various program options.

The notion that gracious manners are a correlate of success seems like a throwback to an earlier and more innocent age than the 1980s. "The rules of etiquette may be part of the game of life," as the *RSVP* manual observes, but most of the players I meet think they're free agents . . . (Blue Lion Software, P.O. Box 650, Belmont, MA 02178, 617/876-2500.)

ACCESSORIES

Deskworks

By: *Jeff Erickson, Kevin Harvey, Mike Hibbets, Tom Hoke, Scott Holdaway, Scott Lindsey, Ian Mitchell and Syd Polk*
Published by: *StyleWare (1987)*
For: *Apple IIGS (512K)*
List Price: *$59.95*
Reviewed by: *Mike Markowitz*

By Apple's "official" definition, a desk accessory is "a program with a relatively limited scope that can be opened while another application is running . . . Some imitate useful objects found on real desktops . . ." such as calculators, note pads, calendars and alarm clocks. In the Apple Desktop (i.e. Macintosh) environment, all desk accessories (DA's) are accessed the same way, by choosing them from the "apple" menu, which is always the first item on the menu bar.

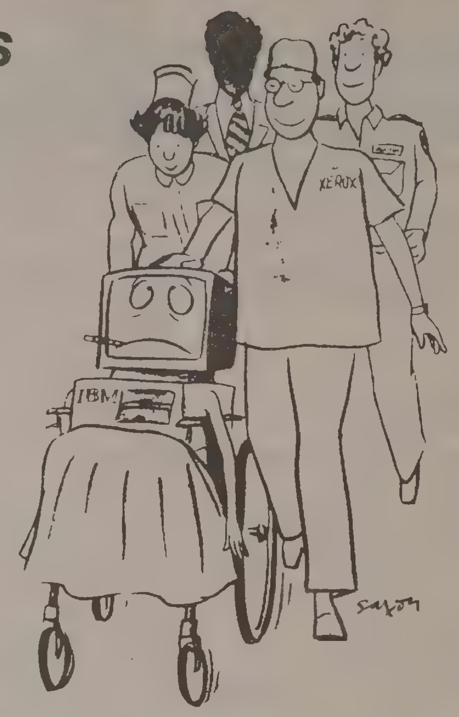
"Classic desk accessories" for the Apple II work by interrupting the normal execution of a program. Some programs allow this, and some don't. Most classic desk accessories are designed as *AppleWorks* enhancements. *Pinpoint* is probably the best-known example. "New desk accessories" for the Apple IIGS work exactly like DAs on the Macintosh. You "install" them by copying them into the System folder of any ProDOS 16 application program — at least that's been the theory. The only desk accessory Apple released with the original IIGS system software was a pop-up digital clock.

StyleWare of Houston, Texas has now released *Deskworks*, a set of eleven new desk accessories for the Apple IIGS. These little programs comple-

XEROX

Our PC system Emergency Room is ready for you.

It's your nearby AMERICARE Computer Repair Center. Prompt, guaranteed Xerox service for your PC systems, whether or not they're from Xerox.



You've got important business to finish, and, suddenly, your PC system goes down.

That's a real emergency . . . but now, Xerox has an Emergency Room for the quick, professional repair you need.

AMERICARE Computer Repair Center provides intensive care for many leading brands of personal computers, including IBM, AT&T, and Compaq.

And equally intensive care for many printers, like Epson, Okidata, Diablo and more, plus disk drives, monitors and peripherals.

Usually within 48 hours, often faster, with a choice of carry-in, pick-up and delivery, or On-Site service options.

Emergency supplies save your day.
Running short on supplies can also shut your system down.

Your AMERICARE Computer Repair Center stocks and sells supplies for many Xerox office products as well as needs for many other system brands, including Okidata, Epson, NEC and Kaypro.

Putting you back in business in no time.

And PC enhancements save your system.
Why not make your IBM or compatible PC smarter?

We stock and install enhancements that make your personal computer more powerful . . . *with more memory, more mass storage, and expansion boards.*

So with a more intelligent PC, you can process your work faster, using state-of-the-art programs.

And that could alleviate all kinds of information emergencies in the future.

For Intensive PC care, contact the nearest AMERICARE Computer Repair Center below. Xerox is ready . . . for any emergency.

COMPUTER SUPPLIES AVAILABLE
XEROX COMPUTER REPAIR CENTER
TeamXerox

MasterCard VISA AMEX Hours: Mon-Fri 8am to 5pm

Riverside/
San Bernardino County
(714) 788-4940

Los Angeles Area
(818) 908-1325
(213) 516-6650 (213) 839-2377

Orange County
(714) 776-8143

XEROX and Americare™ are trademarks of XEROX CORPORATION. IBM is a registered trademark of International Business Machines Corporation. AT&T is a registered trademark of American Telephone & Telegraph.

Hard Drive Sale and Repair Specials

Hard Drive/Floppy Sale Prices	
HARD DRIVES	
10 Mb Half or Full HT	95.00
20 Mb Half or Full HT	185.00
25 Mb Full HT (44MS Access)	225.00
30 Mb Full HT (39MS Access)	325.00
38 Mb Full HT (30MS Access)	425.00
55 Mb Full HT (30MS Access)	525.00
72 Mb Full HT (30MS Access)	700.00
FLOPPY DRIVES	
DS/360K Half HT 5 1/4	65.00
DS/1.2Mb Half HT 5 /14"	90.00
DS/720K Full HT 5 /14"	45.00

Floppy/Hard Drive Repair Specials	
FLOPPY DRIVES	
Align and Test	20.00
Repair and Test (less heads)	30.00
HARD DRIVES	
5Mb - 19Mb	65.00
20 - 29Mb	90.00
30 - 39MB	130.00
40 - 49Mb	150.00
50 - 85Mb	180.00
86 - 150Mb	230.00
Test and Evaluation Only	20.00

COMPCO - Computer Systems and Repair
8016 Remmet Ave. Canoga Park CA 91304 (818) 703-6036

EPSON
(w/Nation-Wide Protection Plan)

EQUITY I+
- 360K Floppy
- 20 Meg Hard Disk
- 640K Ram
- Serial/Parallel Port
- Monochrome Card
- Monochrome Monitor
- MS DOS
- GW Basic

$1295

EQUITY II+
- 1.2 MEG Floppy
- 40 MEG Hard Disk
- 640K Ram
- Serial/Parallel/C/C
- 80286 CPU
- Monochrome Monitor
- Graphic Card
- MS DOS
- GW Basic

CALL

EQUITY III+
- 80286 CPU 6-8 10 MHz
- 1.2 MEG Floppy
- 40 MEG Hard Disk
- DOS 3.2 Mono Monitor & Graphic Card

$2595

LOW PRICE LEADER

LEADING EDGE
MODEL "D"™

CALL FOR NEW LOW PRICES

ALL Configurations In Stock!

NEW IMS Bernoulli Dual Speed

MODEL "D" IS A REGISTERED TRADEMARK OF LEADING EDGE PRODUCTS, INC.

Authorized Dealer Service Center

COMPAQ

Desk Pro 20 meg.	1495
286 30 meg	2875
386 40 meg	4335
386 60 meg/20 MHz	5650
Portable III 40 meg/20 MHz	5450

CARD & MONITOR EXTRA

IBM

PS/2 model 30/20 meg	1695
PS/2 model 50/20 meg	2695
PS/2 model 60/40 meg	3525
PS/2 model 60/71 meg	4595
PS/2 model 80/40 meg	5100

MONITOR EXTRA

LAP-TOP

Toshiba 3100-20	Call
Toshiba 1000	Call
NEC Multispeed	1395
NEC Multispeed EL	1695

WE STOCK CITIZEN OKIDATA TOSHIBA NEC PRINCETON GRAPHICS SONY AMDEK HAYES PC MOUSE MICROSOFT MICE IRWIN & ARCHIVE TAPE BACK

HARD DISK

Seagate 20 meg	305
Seagate 30 meg	365
Seagate 4038	495
Seagate 251	465

SOFTWARE

Microsoft Word	215
Word Perfect 4.2	215
Lotus 1-2-3	325
dBase III +	385
Microsoft Works	135

AND MANY, MANY MORE!

NOVELL
Authorized Dealer
Netware

AST

AST 286 model 80	1495
AST 286 model 120	2350
AST 286 model 140	2650

CARD & MONITOR EXTRA

EPSON
PRINTERS

Epson FX86E	$305
Epson 286E	425
Epson EX800	425
Epson EX1000	455
Epson LX800	210
Epson LQ500	345
Epson LQ1000	549
Epson Laser Printer	1295
LQ850	550
LQ1050	750

WE ACCEPT LC, CASHIER CHECKS, MONEY ORDERS, VISA, MC, AmEx
3% charge on VISA, MC & American Express

COMPUTER LANE

HOURS:
M–S 10–6

(818) 884-8644

22107 ROSCOE BLVD.
CANOGA PARK, CA 91304
½ BLOCK W. OF TOPANGA

CORPORATE ACCOUNTS WELCOME
CALL FOR VOLUME DISCOUNTS

Prices subject to change without notice

Compaq is a Registered Trademark of Compaq
IBM is a Registered Trademark of International Business Machines

MicroTimes circulation is over 120,000 copies per issue. And our BPA Audit confirms it.

Consumer Audit BPA

The circulation you get in **MicroTimes**, the nation's largest regional computing magazine, has been verified by the industry leading auditor of business publications , **B**usiness **P**ublications **A**udit of Circulation, Inc.

The **BPA Audit** gives you an even greater confidence in your decision to advertise in **MicroTimes**. We're proud to give you this independent, written guarantee of our circulation.

Thanks for your business.

MICROTIMES

BAY AREA OFFICE
5951 Canning St.
Oakland, CA 94609
(415) 652-3810

LOS ANGELES OFFICE
1800 N. Highland, Suite 220
Hollywood, CA 90028
(213) 467-7878

SAN JOSE OFFICE
36 Harold Ave., Suite 8
San Jose, CA 95117
(408) 244-4400

ORANGE COUNTY OFFICE
800 S. Brookhurst, Suite 1F
Anaheim, CA 92804
(714) 776-2900

SERVING DOWNTOWN L.A. SINCE 1906

IBM COMPATIBLE XT COMPUTERS
- 8088 CPU, 10MGHZ Board
- 640K RAM
- 2 360K Floppy Drives
- Monographic Printer Port
- Monochrome Monitor
- Keyboard

$695

VISA, M/C & INHOUSE CREDIT

80286 AT COMPUTERS
- 12 MGHZ Board, 0 Wait State
- 1 MEG RAM, 100NS Chips
- 1 1.2 MEG & 1 360K Floppy Drives
- I/O Card with 2 Serial and 1 Parallel Printer Ports
- Monochrome Monitor

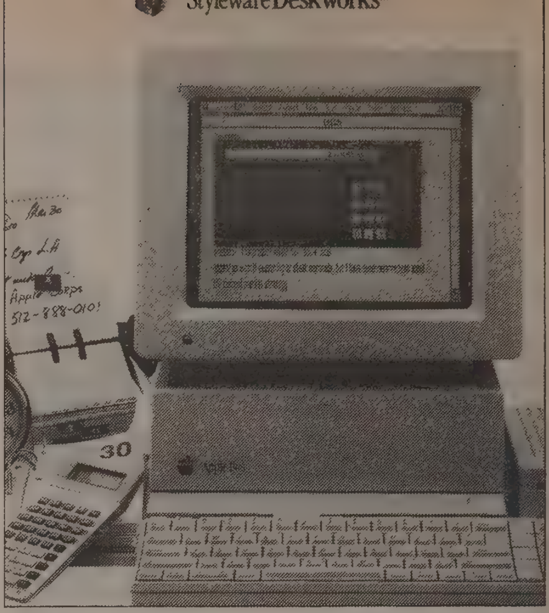
$1195

OPTIONS
- 20, 30, 40 MEG Hard Disk With Controller .$295, $345, $445
- EGA Monitor & Card $400
- Color Monitor $200
- New Tower Case $300

PORTABLE 80286 AT COMPATIBLE
- 12 MGHZ Board, 0 Wait State
- 1 MEG Memory, 100NS Chips
- 1 1.2 MEG Dr 1 360K Floppy
- LCD Display with Adapter
- Keyboard
- I/O Card With 2 Special And 1 Parallel Printer Ports
- Weight 22 lbs. **$1595**

PARKING VALIDATION WITH PURCHASE

COMMERCIAL TYPEWRITER
716 S. SPRING ST., L.A., CA 90014
TEL. **(213) 622-1323**
FAX (213) 683-4825



DeskWorks offers a variety of useful desk accessories to the Apple II user.

ment StyleWare's word processor, *Multiscribe GS*, and graphics program, *TopDraw*, especially well. *Deskworks* operates with both the 320 and 640 graphics modes of the IIGS. For most applications, you may only want to install two or three of these accessories, since they take up disk space you might need to reserve for your own files. Individually the programs are small, but all together they occupy as much as 135K on an 800K disk.

Two of the *Deskworks* programs are pure fun. "Mr. Apple" animates the little multicolored Apple logo at the top left corner of the Menu bar. The colored bands seem to rotate. "Enigma" is a solitaire code-breaking game. It is a clever computer implementation of "Mastermind" (which won the Game of The Year award a few years ago). The computer generates a random pattern of five colored dots, which can be chosen from any of eight colors. You have twelve tries to guess the pattern.

The other *Deskworks* accessories are serious tools. The Calculator emulates a programmable scientific calculator, with seven memory registers, trigonometric functions, logarithms, exponents and a "random" number generator. The calculator display is big enough for quite complex expressions, and many decimal places of precision. There are no statistical functions, however.

The Calendar can display any month between 1935 and 2034. Double-clicking on a date opens an Appointment Book, with fields for every hour from 8 AM to 5 PM, plus "Evening." You can write up to 2000 characters of text into the appointment book, and cut, copy or paste it into other applications.

An Alarm Clock works just the way you would expect, and even has a variable Snooze control. A Phone Filer is based on the metaphor of a Rolodex, but allows for keyword search and automatic dialing (using StyleWare's HyperDialer, a hardware device that connects to the GS speaker port). Owners of *Deskworks* can order the HyperDialer for $14.95 plus shipping and handling.

A Notepad holds up to eight pages of text, with ten lines on each page. A Scrapbook holds blocks of text up to 16K, and graphics (in PICT format) of any size. Graphics can be moved, resized or edited. This is a great convenience when the graphic you want to paste into your document is the wrong size, or needs to be cropped.

Screen Saver blanks out your monitor after a selectable period of inactivity. This preserves the useful life of the phosphor coating. Any mouse movement or keypress will return the screen to normal brightness.

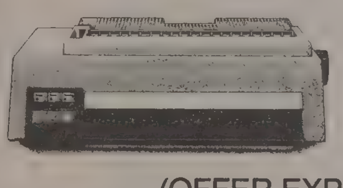
Keymac is a macro utility that lets you store over 100 frequently-used words or phrases and assign them to a particular keystroke or combination. A single macro can be up to 512 characters in length, and multiple macro sets can be saved on a disk.

Finally, there is a Menu Clock that can be copied

FMS DECLARES APRIL. . . FMS PRINTER MONTH

FREE
Aldus Pagemaker with SolutionPac™

IBM POSTSCRIPT PRINTER



$3995

(OFFER EXPIRES APRIL 30, 1988)

IBM PROPRINTER

Narrow Carriage

9 Pin	$395
24 Pin	549

Wide Carriage

9 Pin	595
24 Pin	795

ALPS

24 Pin Color Printers

Narrow	$595
Wide	$795

w/ Tractor

FREE Printer Software Manager

NOVELL NETWORK PACKAGES

THREE-USER ALR 386/2 SYSTEMS FROM $7995
(Installed)

Live network in showroom!

DESKJET PRINTER
HEWLETT PACKARD (Model HP 2276 A)
Laser Quality $795

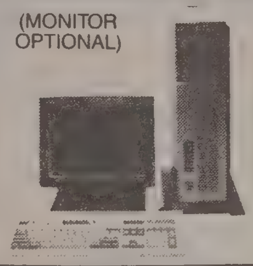
DESKTOP PUBLISHING PACKAGE

IBM PS/2 MODEL 25

- Computer
- Word Processor
- Graphics
- Desktop Publisher
- Mouse
- IBM ProPrinter

$1895

(MONITOR OPTIONAL)



ALR 386/2 SYSTEM PC MAGAZINE'S BEST PICK FOR 1987

- 80386 Processor
- 1.2 MB Floppy
- 1 MB 32 Bit RAM
- One Year Parts & Labor

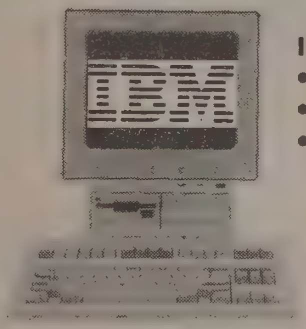
$2095 (16 MHz) **$2595** (20 MHz)

Financing Available—This Month Only—90 Days—Same As Cash—On Approved Credit

IBM COMPLETE BUSINESS PACKAGE

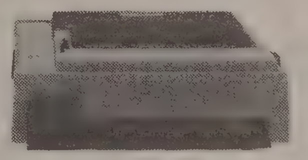
Includes IBM Personal System/2™ Model 25 with 20 MB Fixed Disk & IBM Proprinter II

$1895 COMPLETE



IBM PERSONAL SYSTEM/2™ Model 25

- 640K Ram
- Monochrome Monitor
- Spreadsheet, Data Base, Word Processor Graphics, Communication Software



IBM PROPRINTER II

- 240 CPS
- Near Letter Quality Mode
- Built-In Tractor Feed
- Envelope Feed
- Printer Cable

ACCOUNTING PACKAGE

with General Ledger, Accounts Receivable, Accounts Payable, Inventory and Payroll

ADD **$595**

FMS
COMPUTERS

our new location!

(714) 583-1000
23052 Lake Forest Dr., Suite D-1
Laguna Hills, CA 92653
Hours: Monday-Friday 9 am-6 pm;
Saturday 10 am-5 pm

- **SALES**
- **SERVICE**
- **TRAINING & SUPPORT**
- **UPGRADES**

▶ **EXCLUSIVE!**
CPA on staff, software consultation and training.
14 years systems experience. Call for appointment.

LEADING EDGE®

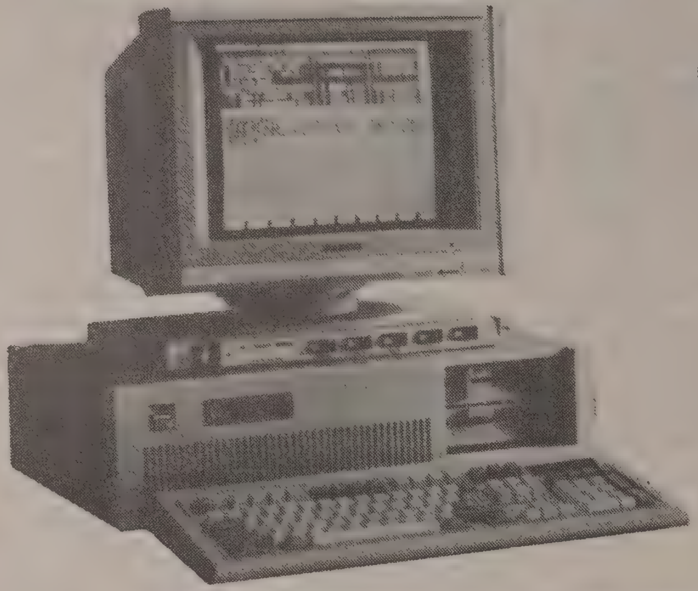
HEWLETT PACKARD Persona Computation Products
AUTHORIZED DEALER

IBM Authorized Dealer

CALL FOR QUANTITY DISCOUNTS
WE ACCEPT CORPORATE P.O.'S.
Prices listed apply to cash sales only.
Prices limited to stock on hand.

Higher Speeds & Better Resolution

At a PRICE you can't resist—ON SALE NOW!

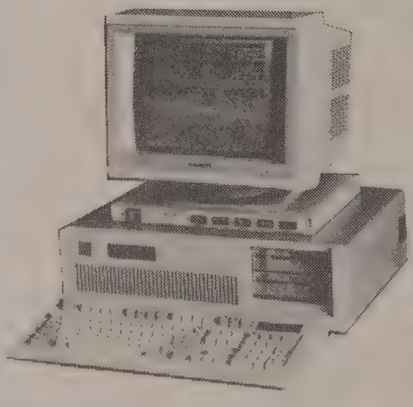


Turbo-12 PC/AT System 12 MHz AT !! (Si=13.3)

- 8/12 MHz turbo speed
- Hardware & software switchable
- 512KB on board, 1MB option
- 640/384 ram distribution
- AMI bios with setup routine
- 200 watt power & AT case
- 1.2MB controller/1.2MB drive
- 5060 keyboard
- Works with Novell Network

$820

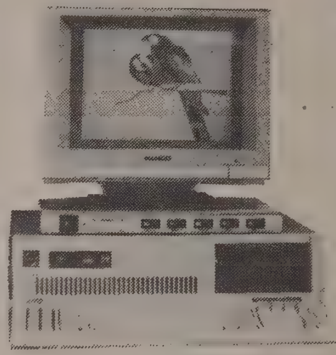
20 MHz 386 (SI=22.5)



- 3 Times Faster Than AT
- Excellent for Autocad & Multi Tasking
- 1 MB (80 nSec) DRAM on board
- AMI bios or Phoenix bios
- 200 Watt Power & Baby AT Case
- W.D. FD/HD Controller
- 1.2 MB Drive
- 5339 Keyboard (101 keys)
- Socket for 80387 co-processor

$2180

10 MHz XT (SI=3.7)



- 4.77/10 MHz turbo speed using standard 4164/41256 RAM
- Hardware & software switchable
- 256KB on board (640KB)
- 8088 CPU, v-20 option Si=3.7
- 150 power & turbo LED case
- FD controller/360KB drive
- 5060 keyboard
- Passed Turbo Test 99 Times

$410

PARCO 14″ Monitors

Amber, Green, Softwhite, RGB & EGA, Color

Amber/Green (Mono/graph/prnt $43)	$105
Softwhite (Mono/graph/prnt $43)	135
RGB Color (Color/graph/prnt $45)	265
EGA Color (Autoswitchable EGA $120)	375
Multiscan (EGA Wonder $190)	$475

PC Accessories

MS DOS 3.3 & G.W. Basic	$95
PC Power Center	35
PC/MS Mouse	59
EPROM Writer	130
1200 Super Modem	85
Citizen 120D Printer	160
Citizen MSP40 (240 cps)	310
Citizen MSP45 (132 column)	420

HARD DISKS

20MB ST225 Hard Disk (w/controller)	$290
30MB ST238 Hard Disk (w/ controller)	300
Wangtek	
40MB ST251 (40 msec)	420
40MB ST251-1 (28 msec)	480

3½″ FD DRIVES

720 KB Teac	$120
1.4 MB Teac	160

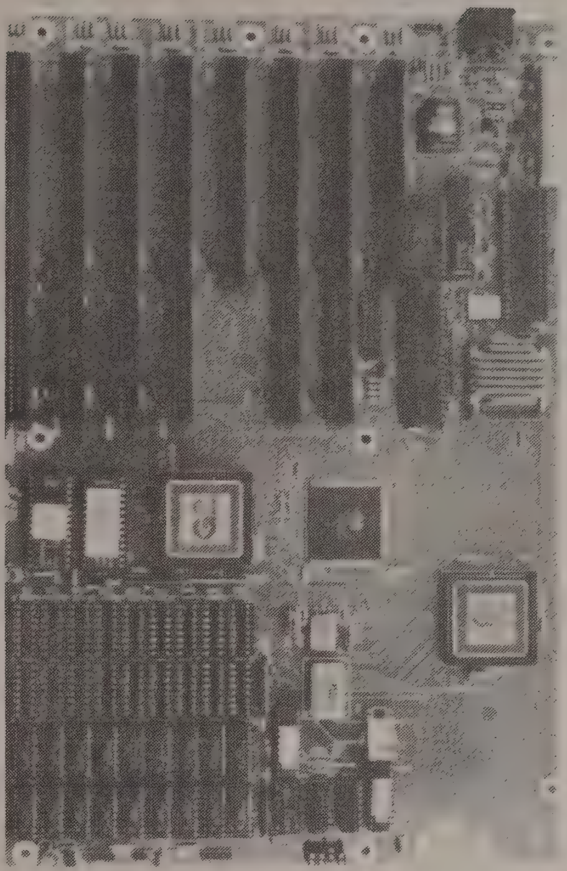
80 Data	We specialize in Multiuser	We Specialize in Desktop Publishing	We specialize in Novell Networking	80 DATA
PC HOUSE GARDENA 17000-M Vermont Ave., Gardena, CA 90247 (213) 532-4244	**PC HOUSE PARAMOUNT I** 15952 Downey Ave. Paramount, CA 90725 (213) 633-2570	**Vanguard Computer Sales** 15528 Crenshaw Blvd. Gardena, CA 90249 (213) 324-1130	**PC HOUSE PARAMOUNT II** 7627 Alondra Blvd. Paramount, CA 90723 (213) 531-8197	**PC HOUSE SAN DIEGO** 8280-127 Clairemont Mesa Blvd. San Diego, CA 92111 (619) 268-1033

16 MHz 286 (SI = 18.3)

The power you have been waiting for!

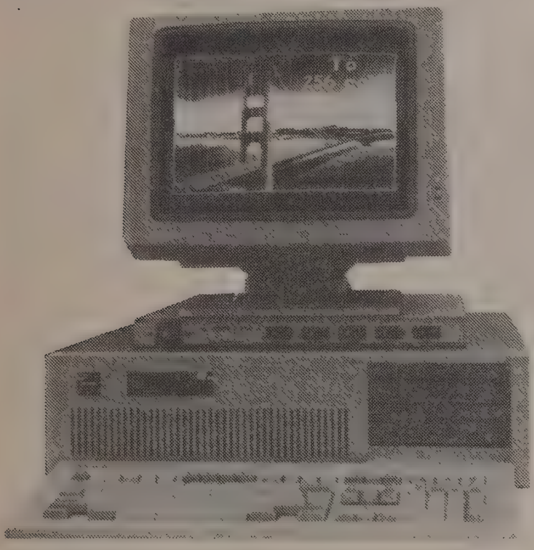
Hardware

Yes	No	
☑	☐	Dual speed 8/16 MHz
☑	☐	Speed switchable
☑	☐	Phoenix or AMI Bios
☑	☐	80287 socket
☑	☐	2 MB expansion available
☑	☐	EMS card available
☑	☐	8 MHz IO speed
☑	☐	32 bit memory access
☑	☐	1 year parts warranty
☑	☐	Turbo speed indicator
☑	☐	Hardware reset



Software

Yes	No	
☑	☐	PC & MS DOS 3.3
☑	☐	Unix & Xenix
☑	☐	Auto CAD
☑	☐	Ventura publishing
☑	☐	Novell networking
☑	☐	Lotus dBase & Frankwork
☑	☐	Multi-user
☑	☐	Multitasking
☑	☐	Microsoft Window
☑	☐	PC Paint & Gem
☑	☐	OS/2 Compatible



- 8 & 16 MHz dual speed
- 512KB (80 nSec) DRAM on board
- Phoenix or AMI Bios
- 200 watt power & turbo AT case
- W.D. FD/HD controller
- 1.2 MB high density drive
- 5339 clock keyboard (101 keys)

$1280

386 Performance at 286 Cost

Co-Processors

8087-2 (8/10 MHz XT)	$165
80287-8 (8/10 MHz AT)	250
80287-10 (10/12 MHz AT)	310
80287-16 (16/20 MHz 386)	550

This Month's Special

(Bring this ad with you)

Autoswitchable EGA card	$99
80 Data Super EGA monitor	$349
Multiscan monitor & VGA card	$795

DRAM

4164 (150 nsec)	$2.25
4164 (120 nsec)	2.50
41256 (150 nsec)	8.00
41256 (120 nsec)	8.50
41256 (100 nsec)	9.00
41256 (80 nsec)	10.00

Prices subject to change.

We specialize in 80386 Systems

PC HOUSE LA MIRADA
14747-A Artesia Blvd.
La Mirada, CA 90638
(714) 521-8161

80 Data

B.E. Computer Systems
7237 Canby Ave.
Reseda, CA 91325
(818) 708-1838

We Specialize in Dr. Office Manager

V & T Computer
2691 Richter #123
Irvine, CA 92714
(714) 474-7748

80 DATA

V & T Computer II
720 S. Euclid Ave. #3
Anaheim, CA 92802
(714) 635-1337

We Specialize in Service

Clone Masters
16945 Mushard St.
Fountain Valley, CA 92708
(714) 963-1090

Dealers & Consultants Only!!
Blow Out Sale

All advertised products now in stock—
get them while they last.

10MHz XT Bare Bones

- Includes Case, Power Supply & Motherboard
- Manufactured by DTK
- One Year Warranty
- Local Service Center

$155

10MHz AT Bare Bones

- Includes Case, Power Supply & Motherboard
- Manufactured by DTK
- One Year Warranty
- Local Service Center

$385

Xtra Special Deals

Logitech Auto Sync
14" EGA Monitor
(Same specifications as NEC Multisync)
$449

Logitech C7 Mouse
$63

Casper 14" Flat Screen
Monochrome Monitor
$113

Casper 14" Flat Screen
Dual Speed Monitor
$135

Individual Parts

Items	Wholesale
Turbo Mono Herc. Card	$34
Color Graphic Card	37
EGA Autoswitch Card (Paradise)	99
XT Serial Card	17
Modem 1200 Baud (Int.)	63
XT 576KB RAM Card	27
RGB Color Monitor (640x250)	210
EGA Monitor (640x350)	320
MS-DOS 3.21	68
Power Center	24
AT 286 MB 6/12 MHz	295
AT 6/10 MHz	235
XT Turbo 4.77/10 MHz	72
AT Case (3 LED's, R & T Button)	48
AT Jr. Case	28
150 Watt Power Supply	35
200 Watt Power Supply	59
5060 Keyboard (84 keys)	29
5339 Keyboard (101 keys)	42
20 MB HD-ST 225 w/ controller	245
30 MB HD-ST 238 w/ controller	265
40 MB HD-ST 251	359

Quantities Limited to Stock on Hand.

WHOLESALE ONLY Hours: M - F 9 - 7 Sat 10 - 6 • One Year Warranty on Most Items

XCALIBER DISTRIBUTION CO.

8057 Raytheon Rd. Suite # 1 & 2, San Diego, CA 92111 619-278-2682

LOOK !
AT STYLE
CASE
10 MHz

SAECO

IBM PC/XT COMPATIBLE
ALL COMPLETE WITH
HARD DRIVE AND
TTL AMBER MONITOR
30MB $995
$30. per month

• Turbo Speed 4.77/10 MHZ • 16-bit 8088-2 Processor • 640K Mb On Board • 8087 Co-Processor Socket • Eight Expansion Slots • 150-Watt Power Supply • Front Panel Turbo/Power/HD Lights • Can Boot-up in Turbo Mode • Unique, Heavy-Duty AT Style Case • Runs all MS-DOS programs including 1-2-3, Flight Simulator, etc. and GW BASIC • Brand New (Not Rebuilt) Famous Brand Hard Drive and Controller Card • System Boots From Hard Drive • 360K Direct Drive (Not Belt Driven) Famous Brand Floppy Drive • Four-Drive (Not 2-Drive) Floppy Controller • AT-Style Keyboard, 84 Keys, LED Indicators and Large Return Key •Monographics (Hercules Compatible) Card W/Printer Port • High Resolution TTL Amber Screen Monitor •System Assembled and Diagnostic Tested in our Labs.

IBM AT COMPATIBLE/40MB. Call for our LOW PRICES
ALL ITEMS FULL ONE YEAR WARRANTY PARTS AND LABOR

SAECO

1122 E. CHEVY CHASE DR.
GLENDALE, CA 91205
(213) 245-7708

FREE
CONSULTATION!

IBM XT, AT is a trademark of International Business Machines

into the Setup file of the System folder. This causes the current time to be displayed at the top right hand corner of the screen.

A spiral-bound manual is illustrated with screen-dumps (some could be more legible) and gives clear explanations of installation and use. The manual could be improved with better descriptions of technical features and limits of some of the accessories, particularly the calculator.

The programmers at StyleWare have mastered the IIGS in a remarkably short time. The *Deskworks* accessories are written by different people with different styles, but they follow the standard conventions of the Apple Desktop, while adding some creative new ideas. This package is an excellent value, and every serious IIGS user should enjoy it. (StyleWare, 5250 Gulfton, Suite 2E, Houston, Texas 77081 (713) 668-1360.)

GRAPHICS

Print Magic

By: *Jimmy Huey*
Published by: *EPYX (1987)*
For: *Apple IIc/IIe/IIGS (128K) mouse recommended; supports most popular printers and interface cards*
List Price: *$59.95*
Reviewed by: *Mike Markowitz*

Print Magic by Jimmy Huey is a creative tool that lets the user print greeting cards and signs which combine text and graphics. If this description sounds familiar, perhaps you noticed that it also exactly fits *Print Shop*, perhaps the single most successful Apple II software package. *Print Magic* is well-positioned to grab a share of the market that *Print Shop* has dominated for over four years.

To understand why anyone would be crazy enough to design a new program that does much the same things as an existing one, you have to look carefully at the improvements and enhancements that *Print Magic* offers. For starters, *Print Magic* is written for 128K of RAM (the original *Print Shop* was squeezed into half that much computer memory). The bigger memory space makes two things possible: A snappy implementation of the Apple Desktop Interface (the "look and feel" of the Macintosh), and much greater graphic detail. *Print Magic* also gives the user more choices and greater flexibility in arranging a page.

Although the program can be used with either a mouse or the keyboard arrows, most users who have a mouse will find it incomparably easier. The program is quite complex, with several layers of menus, but it never overwhelms the user with too many choices at once. The main menu bar, for example, has only three menus: "Apple," File and Print. Under the "Apple" menu are a set of special utilities, plus a handle for future desk accessories. From the opening screen you have three main options: Page Design, Card Design and Banner Design. Banners can only be printed with text, but cards and pages can be printed with any combination of text, graphics and borders. A *Print Magic* border is actually only a zone (of variable width) filled with a pattern. You cannot create your own pattern-fills however.

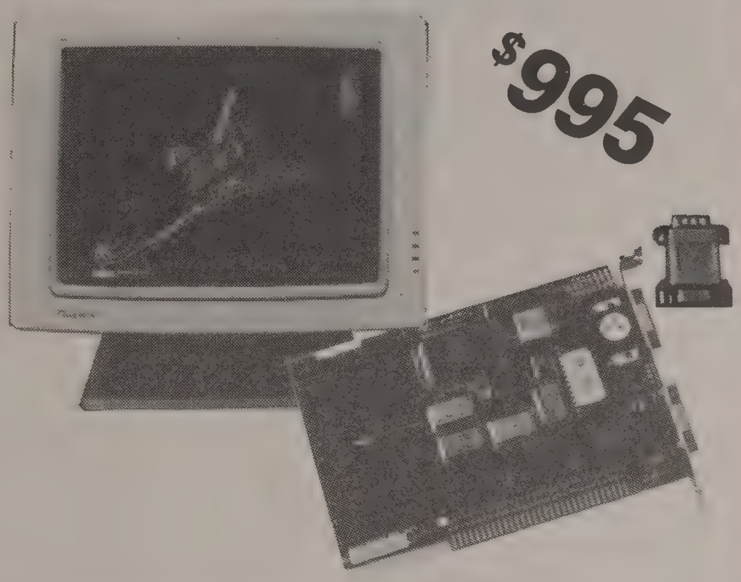
Print Magic can directly import *Print Shop* graphics. This is a great convenience for users who may have a large collection of graphics in this format, but they look pretty crude alongside *Print Magic*'s own highly detailed pictures. Clip art graphics from *Newsroom* can also be imported through a powerful file-conversion utility. A Typeface Editor lets you create customized character sets, or import any of the superb Fontrix® type fonts (published by Data Transforms, Inc.).

There is a very basic "Paint menu" that lets you

The Resolution (800 x 560 in 256 Colors) of Today & for the Future

Relisys

THE VGA BUNDLE



Relisys' top-of-the-line multiscan video monitor (shown), plus a PS/2 VGA monitor, are now each available packaged with a VGA graphics board featuring capabilities beyond the IBM standard. Together the units offer full compatibility with most current and anticipated future applications software packages for all graphic standards.

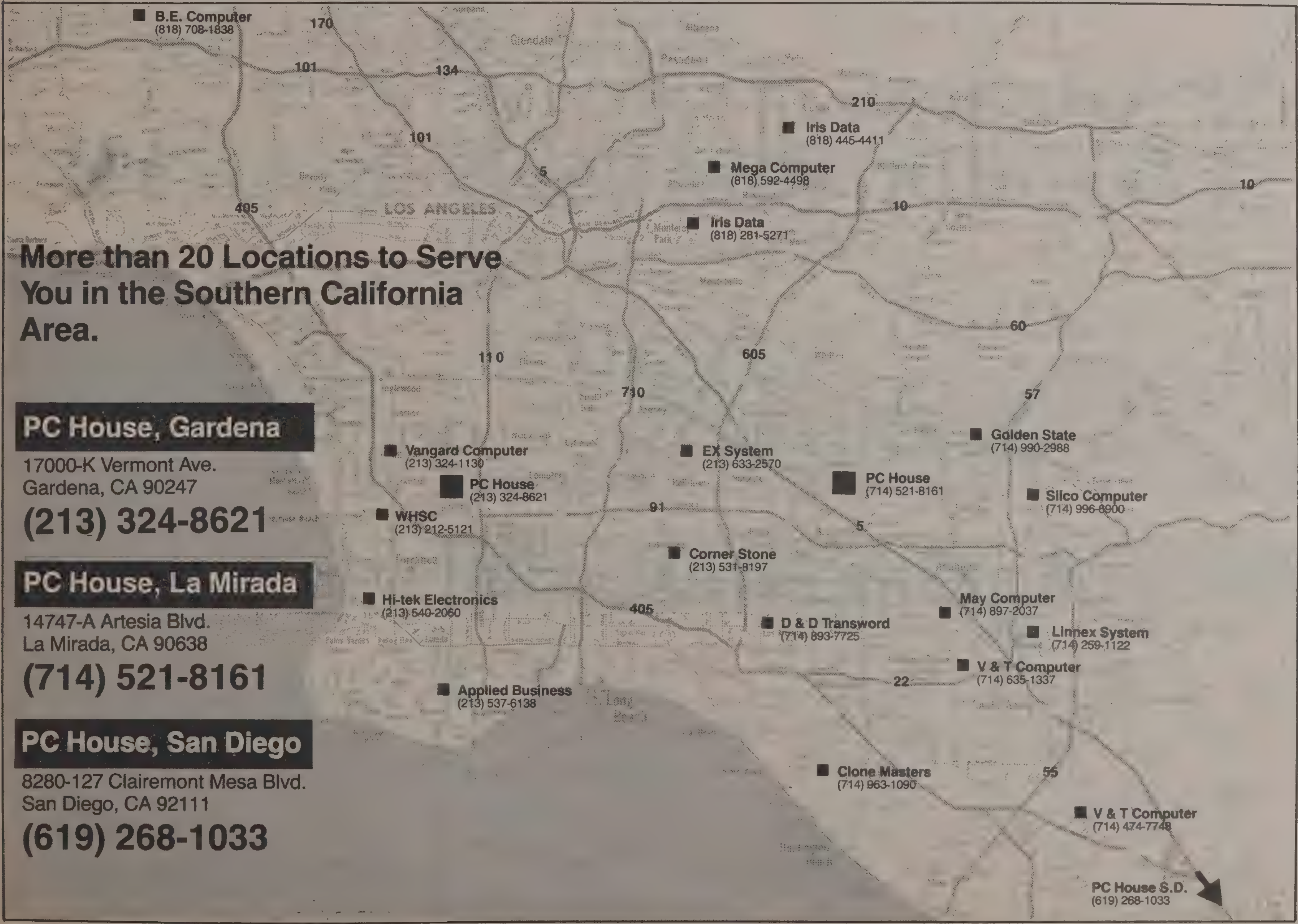
The Model RE5155 Multiscan Monitor is a full-featured PS/2-compatible unit with a high-resolution 14 inch non-glare display, utilizing both TTL and analog video inputs, along with autoswitching circuitry. It features unlimited display colors and 800 x 560 resolution.

The Relisys VGA EP graphics board supports all 17 IBM standard VGA modes and is compatible with EGA/CGA/MDA/Hercules graphics. Beyond VGA it offers 512K on-board memory, three independent zoom windows, hardware pan and scroll, 132-columns for spreadsheet viewing and terminal emulation, and eight downloadable fonts.

Relisys offers the bundled units as Model RV5155 (Multiscan) at a $995 suggested list price.

Multiscan Monitor, and VGA Graphics Card and Adapter

The Relisys VGA Bundle is the perfect solution for most high quality display applications today and into the future. Offering total register-level compatibility with all the EGA and VGA modes, you will be assured that your software will run fast and trouble-free.


B.E. Computer
(818) 708-1838
170
101
134
101
5
405
LOS ANGELES
210
Iris Data
(818) 445-4411
Mega Computer
(818) 592-4498
10
Iris Data
(818) 281-5271
10
60
605
110
710
57
Golden State
(714) 990-2988
Vangard Computer
(213) 324-1130
EX System
(213) 633-2570
PC House
(213) 324-8621
PC House
(714) 521-8161
Silco Computer
(714) 996-8900
WHSC
(213) 212-5121
91
5
Corner Stone
(213) 531-8197
Hi-tek Electronics
(213) 540-2060
405
May Computer
(714) 897-2037
D & D Transword
(714) 893-7725
Linnex System
(714) 259-1122
V & T Computer
(714) 635-1337
22
Applied Business
(213) 537-6138
Clone Masters
(714) 963-1090
55
V & T Computer
(714) 474-7748
PC House S.D.
(619) 268-1033

More than 20 Locations to Serve You in the Southern California Area.

PC House, Gardena

17000-K Vermont Ave.
Gardena, CA 90247
(213) 324-8621

PC House, La Mirada

14747-A Artesia Blvd.
La Mirada, CA 90638
(714) 521-8161

PC House, San Diego

8280-127 Clairemont Mesa Blvd.
San Diego, CA 92111
(619) 268-1033

DESKTOP PUBLISHING

ATARI MEGA

☐ CAD
☐ WORD PROCESSING
☐ SPREADSHEETS
☐ BUSINESS
☐ DATA MANAGEMENT
☐ EDUCATIONAL
☐ GRAPHICS DESIGN
☐ TELECOMMUNICATIONS
☐ PROFESSIONAL MIDI SEQUENCING

The Mega ST Line is the most powerful computer system sold in 2 & 4 Megabyte configurations. This series features a small footprint, detachable keyboard, battery backed clock, expansion bus, and a graphics co-processor which increases the speed of graphics generation.

The Mega ST, combined with the new 300 dot per inch laser printer, which costs HALF the price of comparable units, takes ATARI into the desktop publishing business.

☐ *VERTICAL MARKET SOFTWARE AVAILABLE FOR ALL ST PRODUCTS:* Inventory Control, Retail Stores, IBM Emulation, Mac Emulation, Video Store Management, Etc.

WE ALSO SUPPORT 8-BIT ATARIS
Trade in your used computer for the new Mega series.

Mega 2 mono system	$1699
color system	$1899
Mega 4 mono system	$2399
color system	$2599
SLM Laser Printer w/ purchase of Mega System	$1795

HUGE SELECTION
of ST peripherals & accessories, including professional Midi music software from Hybrid Arts, Dr. T, Steinberg, Sonus, etc.
Watch for upcoming music seminars in our ads!

FREE!
Atari calculator with purchase of any complete system

1040 ST	Color System	**$1049**
1040 ST	Mono System	**$849**
520 ST	Color System	**$849**
520 ST	Mono System	**$649**

COMPUTER CLASSES
SIGN UP NOW!!
Word Processing, Data Management, Etc.
We give PERSONAL ATTENTION TO YOU
Great for New Users

LARGEST SELECTION OF ATARI PRODUCTS IN SOUTHERN CALIFORNIA
PRICES SUBJECT TO CHANGE

MID-CITIES COMP/SOFT
"YOU'LL LIKE OUR FRIENDLY SERVICE"
9406 Flower St., Bellflower, CA 90706
(213) 867-0626 (213) 867-8994

Store Hours: Mon-Fri 10 a.m. to 7 p.m.
Sat 10 a.m. to 6 p.m.
Closed on Sundays

LAKEWOOD BLVD. CLARK FLOWER BELLFLOWER N 91 FWY

Authorized Atari Dealer & Service Center

Just The Fax, Ma'am!

1/2 Copiers Sale!

FAX

CANON 10/20	$890
SHARP	$545
AT&T XEROX	$1490
TOSHIBA 30100	$1090
PANAFAX 110	$1390

RICOH!
NEC

Why EVERYONE is buying the XEROX 7020 Facsimile

1) It uses Plain Paper—SAVES YOU MONEY!
2) Transmission speed—UNDER 20 SECONDS
3) Delay sending—up to 15 locations at one time.
4) Security Locked

ONLY $\$5^{27}$ per day*

*OAC/lease plan

COPIERLAND
821 E. Broadway
Glendale, CA
1-800-USA-MITA
Ask for George

Print Magic
BIRTHDAY CARDS
AWARDS
BANNERS
FREE!

Print Magic lets you design cards, certificates, and banners for all occasions.

draw freehand pictures with a variety of brush shapes, add boxes or circles and flip, invert or mirror images. You can cut and past any part of a page to a Clipboard.

The program takes up two sides of a 5.25" disk, with another two-sided disk holding 84 graphics and 15 fonts. As a bonus, the package we received also contained a disk with 54 additional "holiday" graphics. The program is not copy-protected — a bold and praiseworthy decision by the publisher.

A thoughtful, consumer-oriented feature of the packaging is a sticker on the box listing every supported printer and interface. Printers include the Epson FX and MX series, the Apple Imagewriter I and II, the C, Itoh Prowriter, 8510, Okidata 92/93, 192/193, Panasonic 1080/1081, 1090/1091 and a few others. Interfaces include the IIc serial, IIGS serial, ALS Printermate, Apple Parallel, Dumpling, Epson APL, Graphicard, Grappler+, Hotlink, Image Perfect, Print-It!, ProGrappler, SeriALL, Super Serial, and TYMAC PPC. The program does not support any kind of color printing on those printers that are capable of it. Configuring the program is a simple matter of selecting a printer and an interface from a list.

Print Magic ran without problems on the Laser 128 with an optical mouse. Unlike some publishers, EPYX has been careful to make their Apple II programs work with Apple clones.

A 45-page manual is well-illustrated with screen shots and examples of graphics. A reference card shows all the graphics and samples of the fonts.

My only criticism of *Print Magic* is that I could not get it to recognize an Apple 3.5" drive. A program this size should include some provision for backup to high-capacity storage devices, now that more and more users are acquiring them.

To stay competitive in this feature-crazed market, future releases of this excellent product should include support for color printing, the ability to edit patterns and some fancier borders. (EPYX, 600 Galveston Drive, Redwood City, CA 94063 (415) 366-0606.)

Timeout Superfonts

By: *Mark Simonsen*
Published by: *Beagle Brothers (1987)*
For: *Apple II series (requires AppleWorks version 2.0 or higher); supports most printers and interfaces; 3.5" drive recommended*
List Price: *$79.95*
Reviewed by: *Mike Markowitz*

AppleWorks is not just a program, it's a kind of environment. The huge base of *AppleWorks* users has provided a market for an amazing variety of add-on

DEALERS & CONSULTANTS ONLY

Please Call For Complete Confidential Price List

IBM

IBM	
PS II Model 25 Mono/Color	$969/1195
PS II M.25 M/C + 20 MB HD	1395/1650
PS II Model 30 2 Dr. + 20 MB	**1695**
PS II Model 30-002/021	1230/1695
PS II Model 50-021	2595
PS II Model 60 44MB/70MB	*3195/3895
**PS II Model 80-115 20MHz	7895**
PS II M.80 44MB/70MB	**4295/4895
AT 339 (8MHz, 512K, 30 MB)	Call
AT 068 (6MHz, 256K)	2495
XT 2 DR. 256K	1295
Mono Display 8503/XT STYLE	189/225
Color Display 8512	439
EGA Disp. 8513/XT STYLE	510/595
Ext. Drive F/PS2 (5¼)	285
Pro Printer II/XL	369/545
Pro Printer X24/XL24	545/695
Quiet Writer II/III	965/1135*
IBM DOS 3.3 (min 5)	85

Call For All Other Computer Products

*QUANTITY DISCOUNT AVAILABLE

Seagate

SEAGATE HARD DRIVES	
20MB/30MB W/Controller	$269/289
30MB/40MB (4038/4051)	425/490
40MB (ST 251)/65 MB (277N)	379/565
80MB (4096)/80MB (277R)	*745/599

MINISCRIBE	
20MB/30MB RLL W/Cont.	$279/299
40MB (3650)/40MB (3053)	319/525
40MB (6053) Full Height	555
80MB Full Height (6085)	759

HARD CARDS	
20MB/30MB for XT	$345/399
40MB CARD F/XT 40 MSC	499
20MB/30MB for PS/2	399/435

MISCELLANEOUS	
130MB Maxtor 28Mlsecond	$1495
COMPAQ PORTABLE 20 MB	495
COMPAQ 40/60 MB F/DP386	695/895
10/20 MB IBM HARD DISK	145/195

COMPAQ®

DESKPRO MODELS	
**386/20 MHz 60 MB HD	$5295**
**386/20 MHz 130 MB HD	6695**
386 40 MB 16 MHz Factory	3895
**386 130MB 16 MHz	5495
286 Model 1	1695
286 640K, 20MB/40MB HD	2195/2395
286 Model 40 (Factory)	2750
**386/20 MHz 300 MB	IN STOCK
DESKPRO 2 DR. 256K/20 MB	1095/1395

PORTABLES	
***NEW PORTABLE 386/40MB	$5445
***NEW PORTABLE 386/100 MB	6899
II Model 4 (Factory/Upgrade)	2595/2395
II Model 2 2dr., 256K (80286)	1895
286 640K, 20 MB HD, 10 MB tape B.U.	2995
III Model 20MB	3395
III Model 40MB	3895
Compaq Amber/Green	195
COMPAQ VGA MONITOR	595
COMPAG EGA/VGA ADAPTER	325/425
Compaq DOS 3.3 MIN. 5	84

CALL ON MEMORY PRODUCTS AND OTHER COMPAQ PRODUCTS

Quantity Discount Available

Dealers & Consultants Only

Corporate & Retail Customers Call For Quotes

intel

8087-3 XT/80287-6 AT	$105/160
8087-2 XT/80287-8 AT	145/249
80287-10 AT 10MHz	289
80387-16 for 80-386	455
80387-20 Base Systems	725

OKIDATA

182/182S 120 cps, 30 nlq	$225/269
192+/193+ 200 cps, 40 nlq	325/409
ML292E/293E 200 cps, 100 nlq	359/489
ML393/393 Color 450 cps	945/1029
ML294/2410	737/1695
Lazer Line 6	1299

IRWIN TAPE BACK UP

10 MB. Inter./External	$255/379
20 MB. Inter./External	325/455
40 MB. Inter./External	389/535

Call for PS/2 Tape Back Up Units

Call for Archive, Tecmar, Sysgen

TOSHIBA

321SL (216CPS)	$465
341SL (216CPS)	645
351-SX/351-2 COLOR	995/1019
Toshiba T1000/1100	769/1450
T1200/T3120	2295/2950
T3200/T5100	3675/4995
TOSHIBA MODEM/COMPATIBLE	279/249

HEWLETT PACKARD

Laser Series II	$VERY LOW
*DESK JET NEW 250 CPS	$695
1MB Mem. Expansion	339
2MB Mem. Expansion	639
HP Plotter 7475A	1395
HP Scanjet Scanner w/ Int.	1395

NEC

MULTISPEED EL/HD	$1455/2299
MULTISYNC II/PLUS	565/875
MULTISYNC XL 20″	1495
LC860+/LC890	1899/3295
P760/P2200	599/333

LOTUS 1-2-3 $289 ***LOTUS SYMPHONY 3½″ $259***

D-DATA

One stop shopping for dealers & consultants. We also carry NEC • AST • HERCULES • DRAMS • MODEMS • CITIZEN • MICROPOLIS • SONY • MICROSOFT • SAMSUNG

D-DATA
4742 Woodman Avenue
Sherman Oaks, CA 91423
(818) 905-0994 FAX 8189058869

Service charge on all credit card purchases.

products that patch, modify or enhance Robert Lissner's original program. Desk accessories, spell checkers, macro utilities, graphics packages, and a bewildering array of other tools compete for disk space, computer memory and the dollars of AppleWorkers.

A new generation of Apple II word processors (such as *Multiscribe*) offer something *AppleWorks* can't easily provide—multiple fonts and type sizes in a document. Apple II users think they want this capability because their Macintosh owning friends have it, and they tend, understandably, to sneer at those who lack it . . .

Timeout Superfonts is a complete set of Macintosh-style fonts that can be used from inside *AppleWorks*. The list includes:

Athens 18
Cairo 18
Chicago 12
Courier 9, 10, 12, 14, 18, 24
Geneva 9, 10, 12, 14, 18, 20, 24
Helvetica 9, 10, 12, 14, 18, 24
London 18
Los Angeles 12, 24
Mobile 18
Monaco 9, 12
New York 10, 12, 14, 18, 20, 24
San Francisco 18
Symbol 9, 12, 14, 18, 20, 24
Times 9, 10, 12, 18, 24
Venice 14

The fonts are provided on a 3.5" disk, and also on two sides of a 5.25" disk (which lacks the Helvetica and Times font sets). *Superfonts* is one of seven *AppleWorks* enhancements in Beagle Bros. *Timeout* series. These programs all work in a similar way. Once they are installed they "pop up" on a special menu when you press the <Open-Apple> and <Escape> keys together. They also display their own title screen when you first boot *AppleWorks*. To print using *Superfonts* you have to insert special "Load Font" commands into the text of your document. These commands must all be at the very beginning of a file, and each must be on a separate line.

Any font can be modified with italic, outline, shadow or inverse (white-on-black) attributes, using special commands inserted in the text of your document. *Superfonts* is compatible with most of the Printer Options in the *AppleWorks* word processor. This is far from the convenience and immediacy of What You See Is What You Get, but you can preview how your page will look by printing "to the screen" rather than paper.

Superfonts also has simple Load Picture and Put Picture commands that allow you to insert Hi-Res and Double Hi-Res graphics into an *AppleWorks* word processor document. The number and size of the graphics may be limited by the computer's available RAM.

A 56-page manual has an index and illustrations, but lacks good samples of how the fonts look on paper. This may be too printer-dependent. The Cairo font, a set of cute little symbols, at least should have a keyboard map — otherwise it's almost impossible to use. On the ImageWriter II the fonts look very sharp. A large number of printers and interface cards are supported.

Superfonts is not cheap, but it represents a very good value for users who want to use multiple fonts and type styles without giving up the familiar *AppleWorks* environment. Combined with some of the other *Timeout* programs (*Quickspell*, *Graph*, *Ultramacros*, *Sidespread*, *Filemaster* and *Desktools*) it gives good old *AppleWorks* another competitive advantage in a crowded and turbulent market. (Beagle Brothers, 6215 Ferris Square, Suite 100, San Diego, CA 92121 (619) 296-6400.)

Quality • Low Price • Support

MICRO INVESTORS CORP.
8517 Washington Blvd. Culver City, CA 90230
FAX # (213) 204-5718•TLX 3729124 MIC

MIC

(213) 204-5566
Let us custom configure a system for you.
All system Go thrue rugget 48 hour burn in.

10 MHZ Turbo XT

- AT Style Case
- 4.77/10 MHZ system board
- 256K memory expd. to 640K
- 360K floppy disc drive
- Clock, calendar, serial 2parallel, game port.
- Fuji 20 meg shock mounted self parking hard disc drive.
- Monochrom graphic adapt
- High Res. TTL Amber monitor.
- AT style keyboard.

$849.00

10MHZ AT 286

- 6/10 MHZ system board
- 512K memory expd to 1MB
- WD combo floppy, hard disc controller
- Fuji 1.2 MEG floppy drive
- Miniscribe 40 MEG hard drive
- Serial and 2 parallel port
- Monochrome graphics adaptor
- High res. TTL amber monitor
- At style keyboard.

$1369.00

16 MHZ 386 System.

- 16 MHZ main system board
- 1 MB memory expd to 4 MB
- WD combo floppy, hard disc controller
- Fuji 1.2 MEG floppy drive
- Enhanced keyboard
- Serial, parallel,game ports
- Monochrom graphics adaptor
- Hight Res. TTL Amber monitor.

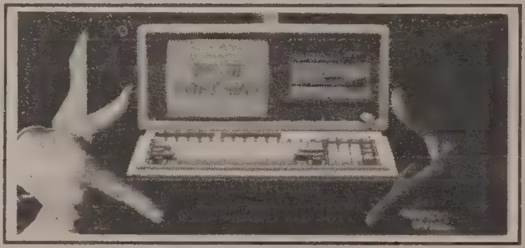
$2119.00

DT III/88 Portable.

- 4.77/10 MHZ system board.
- 256K memory exp'd to 640 K.
- 360K floppy disc drive.
- Clock, calendar, serial 2 parallel game port.
- Fuji 20MEG shock mounted self parking hard disc drive.
- Monochromgraphics or color graphics adaptor.
- 9" dual frequency monitor.
- 180 wat power supply.
- 84 Keys Alps tactile keybord.

$1095.00

DT III Portable Computer
A True Portable, Less Than 19LB's.



- Constructed from alluminum alloy
- Weight? : Less than 14lbs.
- Power? : 180 watts 110/220 auto switch.
- Keyboard? : 84 keys alps tactile mechanical key switch.
- Monitor : 9" dual frequency high Res.

DTIII /286 Portable

- 610 MHZ system board
- 512K memory exp'd to IMB.
- WD combo floppy hard disc controller
- Fuji 1.2 MB floppy drive
- Serial and 2 parallel ports
- Monochrom graphics or color graphics adaptor
- 9" dual frequency monitor
- 180 watt power supply.
- 84 kays Alps tactile keybord.

$1180.00

20 MB system.**$1436.00**
40 MB system.**$1525.00**

MONITORS.

Taxan	124	$112.50
Taxan	720	$361.25
Taxan	765	$468.75
Taxan	770+	$600.00
Sony	1302	$675.00
NEC	Multisine	$675.00
Pacard bell	TTL	$77.50
Samsung	1464	$286.25
Samsung	EGA	$412.50

VIDEO CARDS.

Monochrom graphics		$37.00
Colorgraphic		$37.50
Mega 400 EGA	640 x 350	$131.25
Genova EGA	640 x 480	$181.25
Genova PGA	800 x 600	$281.25
STB multi RES II	640 x 400	$218.75

MODEMS

1200 Baud	int	$80.00
1200 Baud	ext	$94.00
2400 Baud	int	$169.00
2400 Baud	ext	$189.00

HARD DISC DRIVES

Fuji 20 MB	XT	$256.00
Fuji 30 MB	XT	$268.00
Fuji 30 MB	AT	$468.00
Miniscribe 40MB	XT/AT	$344.00
Miniscribe 44 MB	XT/AT	$675.00
Miniscribe 72 MB	XT/AT	$936.00
Micropolia 72 MB	XT/AT	$665.00
Fuji tsn 149 MB	AT/386	$950.00

PRINTERS
Okidata, Panasonic,
Citizen, Epson,Toshiba

HP Lazer II
$1969.00

HP Scan Jet Interface
$1650.00

Documentfeder
$ 495.00

WHAT'S
HAPPENING?
Check the MicroTimes Calendar of Events in this issue for
computer-related classes, seminars, and shows in your area.

AMERICAN DIGITAL DISCOUNT ASSOCIATION

SUPER iXT SYSTEM

with Floppy Drive
Floppy Drive Controller
Monochrome Monitor
Video Card
20 Mb Hard Disk
V-20 Chips

Model II/8MHz	895.00
Model III/10MHz	945.00

Super iAT/12.5 MHz System

Super iAT/12.5 MHz System

• 0 or 1 wait state • 1.2 MB floppy drive • 40 MB hard disk (39 ms) • Hard disk and floppy drive controller • Monochrome monitor • Video card w/printer port • With 0k memory • 101 enhanced keyboard

$1295

please call for Super iAT 20 MHz

ACER 386 System

ACER 1100

CPU — Intel 386
16 MHz Clock Speed
1.2 Mb Floppy Drive
40 Mb High Performance Hard Disk.......... **$CALL**

TOSHIBA LAPTOP-3120

AT Power in a Compact Size
GaS Plasma Screen
8MHz Speed
640K Memory
One 3.5'' 720K Floppy Drive
Parallel/Serial Port
20 Mb Hard Drive

T3120 Laptop	**$ Call**
T1000 Laptop	**$ Call**

TAPE BACKUP SYSTEM

ARCHIVE 60Mb Tape Backup
Self Contained & Menu Driven Image & File by File Backup • PC/XT, AT & Compatibles
Quick Data Format

Internal........................	**$495**
External	**$595**

MODEMS

1200 Baud Internal.....**$89**
Fully Hayes Compatible

ADDA 2400 Baud Internal
w/ProCom Software
Support Com 1 - Com 4
Made in U.S.A........**$139**

U.S. Robotics 2400 Baud
Internal w/BitCom Software
Made in U.S.A........**$169**

EGA MONITOR

TAXAN 770 Multivision
14'' Screen, 800x600........**$525**

TAXAN 765 Monitor
14'' Screen, 650x350 **$415**

TATUNG 1380 Monitor
13'' Screen, 650x350 **$395**

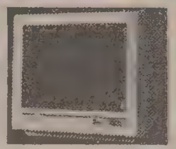
EGA CARD

Genoa EGA CARD....**$165**
800 x 600

ATI NEW ENHANCED CARD
Auto-switch Capability, 800x560, 132 Column emulation supports VGA, EGA, MGA, CGA **$195**

RGB MONITOR

CGA Spec.
640x200
Resolution.



TAXAN 720..........	**$275**
TATUNG 1360	**$325**
ADDA RGB	**$245**

PRINTERS

240cps in Dot Matrix. 50cps in Near Letter Quality. Epsen 286 Compatible Tractor & Friction Feed.

FORTIS DM2015 - 132 Col.	**$395**
FORTIS DM2010 - 80 Col.	**$345**
DM1310 130cps, 80 Col.	**$225**

EPSON PRINTER 300cps, NLQ Mode

EX-800 80 Col. (OEM)	**$ Call**
EX-1000 132 Col. (OEM)	**$ Call**

HARD DRIVE for PC/XT

20 Mb w/Controller	**$295**
30 Mb w/Controller	**$345**
60 Mb w/Controller	**$795**
100 Mb w/Controller	**$1495**

HARD DRIVE for PC/AT

20 Mb ST-125 (28mS)	**$CALL**
30 Mb ST-138 (28mS)	**$CALL**
40 Mb By Seagate (39mS)	**$425**
40 Mb ST 251-1 (28mS).......	**$495**
80 Mb By Seagate	**$795**
120 Mb By Maxtor, 25mS	**$2995**

TTL MONO MONITOR

TTL Monochrome Monitor

Taxan 123 Green	**$109**
Taxan 124 Amber	**$119**
Tatung Green	**$ 99**
Tatung Amber	**$109**
ADDA Amber	**$ 89**

SPECIAL OF THE MONTH

Thompson Multisync Monitor
Model 4460D
14″ screen, 800 x 600
Special Sale:
$425

EMS CARD

0K Expandable to 2.5 Mb
Supports EMS Standard
Works with Lotus Release 2 Etc. w/Software

For AT	**$89**
D-RAM 41256	**$ Call**

ADD-ON CARDS

Mono Graphic/Printer Port	**$49**
Color Graphics Card	**$49**
CGD & MGD Combo Card	**$69**
XT Multifunction w/384K Memory	**$159**
XT Multi-I/O Card	**$69**
XT Mini-I/O Card	**$59**
AT Mini-I/O Card	**$69**

LASER PRINTER

LASER PRINTER
By HP
Laser II
$1695

PC XT/AT KEYBOARD

KEYBOARDS
for
IBM PC/XT, AT

Enhanced AT Keyboard **$79**

FLOPPY DISK DRIVES

XT-360K	**$79**
AT-1.2 Mb	**$99**
AT/XT-3½''	**$99**
Apple IIC & IIE	**$125**
MacIntosh MAC-800K	**$195**

POWER SUPPLY

Uninterruptable Pwr Supply
Power Failure Interrupt Signal to Computer
Back-up Power for 15 Min.
Noise Surpression & Surge Protection

500 Watt **$ Call**

POWER SUPPLY

150 Watt Power Supply For PC/XT	**$49**
200 Watt Power Supply For PC/Baby AT	**$69**
200 Watt Power Supply For PC/AT	**$79**

SYSTEM SOFTWARE

(New)
MS DOS 3.3
w/GW BASIC
$ Call

AT New Case

IBM
Model 50
Compatible Case
$CALL

ACCESSORIES

8087 Chip	**$ Call**
80287 Chip	**$ Call**
Printer Cable	**$12.00**
2-Way Data-Switch Box	**$29.00**
3-Way Data-Switch Box	**$39.00**
Power Directory	**$39.00**
Power Directory with Modem Protection	**$69.00**

Prompt delivery, usually shipment within 48 hours (except personal check orders). We welcome major educational institutions and government agencies to establish open accounts (P/O) status with us to facilitate shipment of orders. Write or call for details.

Prices quoted above do not include UPS shipment charges.
Prices subject to change without notice.
California residents add 6½% sales tax.
Mastercard or Visa add 3%

Business hours: Mon.-Sat. 8:30am - 5:30pm

IBM PC is a registered trade mark of IBM Corp.
TAXAN is a registered trade mark of TAXAN Corp.

©1987, American Digital Discount Association

AMERICAN DIGITAL DISCOUNT ASSOCIATION, INC.
In Torrance
4040 Spencer St., #M
Torrance, CA 90503
(213) 542-3578

COMPUTER SYSTEM INTEGRATORS #1 IN O.C.

CSI Since 1981

Need Help Finding the Right System For You . . .?

Let Your CSI Expert Help!

— We're Consultants, Not Salesmen! —
— Our Support is Unequaled! —
— Our Prices are Competitive! —
— We Do It Right the First Time! —

Interest Free Financing!
90 Days same-as Cash
No Down Payment

AST Premium 286 Computer Systems

Starter System: 512K Memory, 40 MB Seagate Hard Drive (28 ms), Monochrome Monitor, Hercules Mono-Graphics Card $2495

EGA System: 1 MB Memory, 40 MB Seagate Hard Drive (28 ms), Samsung EGA Monitor, 640x350 Autoswitch EGA Card $2995

VGA System: Designed for **High Resolution Graphics, CAD** or **Desktop Publishing**, 1MB Memory, 40 MB Seagate Hard Drive (28 ms), Mitsubishi Diamond Scan Analog Monitor, Genoa 800x600 Level 7 EGA/VGA Adapter, Software Drivers for all popular programs including Autocad, Ventura, Lotus, GEM, Windows, etc. $3295

• Other Systems and Peripherals Available — Call the Experts at CSI!
Authorized Dealer — Factory Direct Pricing

Leading Edge/Panasonic SYSTEM

- Model D-Turbo • 30 MB Hard Drive
- 360K Floppy Drive • Monochrome Monitor
- Panasonic 1080i Printer
- Disks • Paper • CSI Tutorial Software • Cables

COMPLETE $1449

OKIDATA Laserline™ 6 Printer

List $1795 NOW $1395

Fast, Quiet, High Quality Printing!
15 Typeset-Quality Fonts Built-In.
LaserJet® Plus Compatible

Zenith — TOSHIBA — NEC LAPTOPS

Computer System Integrators is Orange County's Laptop Headquarters! Compare & Save!

- 1200 Baud Internal Modems with Software .... only $275
- 2400 Baud Internal Modems with Software .... only $375
- 5¼" Laptop External Floppy Drives ...... only $249

Apple IIgs/Magnavox System

Apple IIgs w/Keyboard and Mouse • 512K Memory Expansion • • Magnavox Ultra-High Resolution Analog/Digital/Composite Monitor • 3½" and 5¼" Disk Drives • • CSI Tutorial Software • Free Computer Class

$1750.00

with Panasonic 1080i Printer, Card and Cable $2050

Proexec V Turbo XT

$849.95

Starter System:

- 16 Bit 8088-2 Processor
- 4.77/10 MHz
- 640K Memory
- Two 360K Floppy Drives
- Monochrome Monitor and Video Card

LASER 128 PERSONAL COMPUTER /Panasonic System

Laser 128 Apple Compatible Computer, 128K Memory, Second 5¼" Disk Drive, Monochrome Monitor, Panasonic 1091i Printer, Cables, CSI Tutorial Software, Free Computer Class

COMPLETE $899 or with 128ex $999

Laser 128 .... $380 Laser 128ex $480

NEW MODELS & ACCESSORIES IN STOCK!

hp • JETWARE • Bitstream For LaserjetII

Complete Font Sets $175-295
Jetfont Lotus 1-2-3 .... $295
1MB Memory Card $395
2MB Memory Card $695
4MB Memory Card $1295

Hard Drive Installation

Let your CSI expert install a Hard Drive in your PC/XT/AT or Compatible.
30 - 200 MB Drives Available
Installation & Formatting Included!

COMPUTER CLASSES Starting Weekly

• Intro to PC's • Intro to Apple II's •
• Word Processing • Lotus 1-2-3 • DBase III •
Private Classes, Consulting and Programming Services Available

Is Your Computer Sick?

Let your CSI Doctor Fix It!!
—Free Evaluation—

FACTORY AUTHORIZED SALES & SERVICE

O'SULLIVAN COMPUTER FURNITURE

Complete Computer Workcenter

A place for everything Workstation, computer hutch and printer stand with 90° angle corner.

$149.95 COMPLETE

FORMERLY COMPUTER TEACHER

CSI

COMPUTER SYSTEM INTEGRATORS (714) 547-0400
15012 Redhill Avenue, Ste. B, Tustin, CA 92680
Open Tues.-Thurs. 10-7 / Fri.-Sat. 10-5 / Sun.-Mon. Closed — Other Hours by Appt.
• On-Site Factory Authorized Service •
INTEREST-FREE FINANCING - FREE CLASSES w/Purchase
Prices Reflect a 3% Cash Discount

(55) Frwy. Redhill Edinger
Edinger off 55
CSI Koll Business Center
N

Kenfil Announces Top Software Sellers

BUSINESS & PRODUCTIVITY —MS-DOS

Last Month	April	
1	1	Turbo Tax
2	2	WordPerfect
4	3	Turbo Pascal 4.0
5	4	Managing Your Money
7	5	FormTool 2.0
3	6	Quattro
6	7	Turbo C
8	8	Paradox
9	9	Dac-Easy Accounting
11	10	MathCAD
12	11	WordPerfect Library
–	12	Carbon Copy
13	13	Clipper
15	14	Gem 3 Draw Plus
–	15	Flow Charting II

UTILITIES—MS-DOS

Last Month	April	
1	1	Norton Utilities Advanced
12	2	XTree Professional
2	3	Direct Access
11	4	PC Tools
6	5	Sideways
3	6	Fastback Plus
4	7	Mace Utilities
8	8	DESQview
9	9	Disk Optimizer
7	10	Norton Utilities 4.0
10	11	Print Q
14	12	SeeMORE
–	13	Q Dos II
5	14	Disk Technician Plus
–	15	XTree

MACINTOSH

Last Month	April	
1	1	MacinTax
6	2	Mac Money 3.0
3	3	Superpaint
4	4	Suitcase
5	5	Canvas
–	6	The Curator
7	7	Mac Coach
8	8	MacTREE
–	9	Managing Your Money
10	10	Wordfinder

Source: Kenfil Distribution, Van Nuys, CA. "Kenfil April Bestsellers."

San Gabriel's Low Price Leader!!

Complete Systems!!

30 MB AT 10 MHz COMPATIBLE TURBO SYSTEM

BEST BUY!

- 6/10 MHz 80286 CPU
- 1024K RAM on board
- AT Case (Lock, 3 LEDs, Reset)
- 200 Watt Power Supply
- 1.2 MB Floppy Drive w/Controller
- **30 MB Hard Disk w/Controller**
- Mono Graphic Card
- Parallel Port/Clock/Calendar
- TTL Hi-Res Monitor
- Enhanced AT Keyboard
- 1 Year Warranty

$1309

COLOR SYSTEMS ADD $180

EGA SYSTEMS ADD $380

40 MB ENHANCED 12 MHZ AT COMPATIBLE SYSTEM

- 6/12 MHz 80286 CPU
- 1024K RAM on board
- AT Case (Lock, 3 LEDs, Reset)
- 200 Watt Power Supply
- 1.2 MB Floppy Drive
- **40 MB Hard Disk**
- WA 2 HDD/FDD Controller
- Mono Graphic Card
- Parallel Port/Clock/Calendar
- TTL Hi-Res Monitor
- **Enhanced AT Keyboard**
- 1 Year Warranty

$1529

XT TURBO COMPATIBLE COMPLETE SYSTEM

- 4.77/8 MHz Switchable
- 8088-2
- 640K on board
- AT jr. case (lock, 3 LEDs, reset)
- 150 Watt Power Supply
- Two 360K Floppy Drives
- Mono graphic card
- Parallel port
- TTL Hi-Res Monitor
- AT Style Keyboard
- 1 Year Warranty

$645

AT TURBO COMPATIBLE 10 MHz SYSTEM

- 6/10 MHz 80286 CPU
- 1024K On Board
- AT Case (Lock, 3 LEDs, Reset)
- 200 Watt Power Supply
- 1.2 MB Floppy Drive
- W.D. FDD/HDD Controller
- Mono Graphic Card
- Parallel Port/Clock/Calendar
- TTL Hi-Res Monitor (720 X 350)
- AT Keyboard (Enhanced)
- 1 Year Warranty

$1029

20 MB System. $1219

20 MB XT COMPATIBLE TURBO 10 MHz SYSTEM

- 4.77/10 MHz Board
- 640K on board
- AT jr. case (lock, 3 LEDs, reset)
- 150 Watt Power Supply
- One 360K Floppy Drive
- **20 MB Hard Disk**
- Mono graphic card
- Parallel port
- TTL Hi-Res Monitor
- AT Style Keyboard
- 1 Year Warranty

$899

30 MB System $915

40 MB System. $1009

OPTIONS

FUJITSU 360K Drive (Black)	$70
FUJITSU 360K Drive (Beige)	73
FUJITSU 1.2 MEG Drive	89
Citizen 120D Printer	160
Citizen 180D Printer	189
Panasonic 1090i II Printer	225
NEC Multisync II Monitor	595
TAXAN 770 MultiVision Plus	545
CTX EGA Monitor	355
Samsung RGB Monitor	245
Mitsubishi DiamondScan	545

MONTHLY SPECIALS

SONY
3.5″ Drive 720K
$95
3.5″ Drive 1.44 MB
$120

MULTI DRIVE CONTROLLER
Controls 1.4, 1.2, 720K, 360K Drives
$52

QCOM TTL MONITOR
Over 1000 Lines Resolution
$65

LEGATECH COMPUTERS

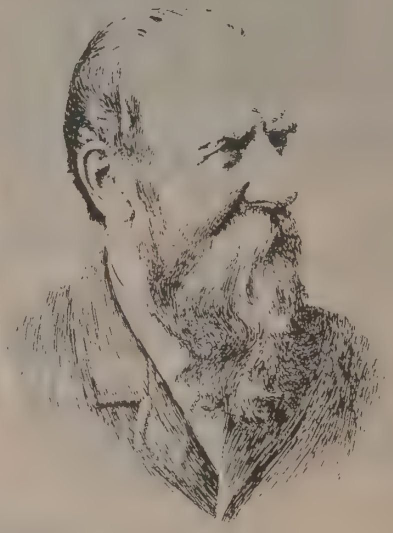
789 S. San Gabriel Blvd. #D, San Gabriel, CA 91776
(818) 309-2941

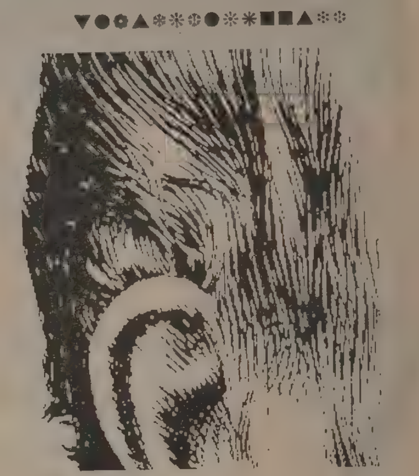
ORDER INFORMATION:
Prompt delivery. $3 handling charge plus UPS shipping. COD Cashier's Check/M.O. ONLY Personal Checks allow 10 days to clear. CA residents add 6.5% sales tax. Prices & availability subject to change w/o notice. No returns & repairs w/o prior auth. All returned merch. subject to 15% restocking fee.
DEALER INQUIRIES INVITED

Not responsible for typographical errors.

MacPaint format reduced

TIFF format 100%





Van E TIFF

Examples of different formats.

The Abaton 300 Series Scanners And The Dance Of Nine File Formats

By Lenny Bailes

Fads and compulsions come and go amongst people who are attracted to personal computers. Obsessions differ in the Mac and PC worlds, however. Whereas the PC wizard seeks to suspend an ever-increasing number of balls in the air (preferably without having to quit *Lotus 1-2-3*), the Mac wizard seeks to conjure a golden rectangle and fill it with magical phantoms of ever increasing resolution and gray-scale content.

The Abaton 300 is one of a new generation of scanners which allows you to transcend the simple black/white, 72-dot-per-inch graphics of *MacPaint*. The new generation of scanners allows you to approach the image fidelity of the Linotronic machines used by most magazine and newspaper publishers.

With the Abaton scanner and its supporting software *C-Scan*, you can capture images at 300 dots per inch, look at them on screen in three viewing resolutions, and open up to four windows for editing, cutting & pasting individual scans. With a PostScript printer the images can be printed in any percent magnification or reduction with effortless control of placement on the page — all without saving to disk. PostScript images can be sent to a Linotronic machine at 1200 dots per inch.

To run the scanner you need a Mac with at least 512K of memory, (System v. 3.2, Finder v. 5.3, Laser Prep v. 3.1, or later versions), and *C-Scan*. On the newer Macs you can connect the scanner to either the modem port or the SCSI port. Abaton supplies the appropriate cables for SCSI and sells other cables separately. (You need an Apple MO189 cable to use the serial port on the newer Macs). The scanner can also be connected directly to an external hard disk with the SCSI adapter.

The Abaton 300/SF takes pictures on single sheets which are inserted through a roller-slot. The 300/FB scans from a flatbed glass plate upon which you can place single sheets or books. *C-Scan* version 1.6, the current software, can read up to 95.8 square inches (8.4" x 11.4") on one scan. How much of this area you can read is a function of your memory and disk storage space. If you don't have enough RAM to hold a full page, you can tell *C-Scan* to temporarily store the information on disk.

Scan Modes

Pictures can be captured in three scan modes, line-art, halftone and gray-scale. *C-Scan* supports four-bit gray levels, which means you can get up to 16 possible shades of gray in one picture.

Line-art mode is what you would use to record a simple pen and ink sketch with only black and white areas, no shading. Pixels are either turned on or off in a one-to-one correspondence with your image.

Halftone mode is what you use for more complicated sketches or photographs. The gray-scale information is stored only in clusters of black and white, but the way these clusters are grouped creates the effect of representing an image with more than one color or shade. There are two fill-patterns which can be selected for background with *C-Scan* halftones: random and spiral. They make the backdrop which represents white space in your picture.

Gray-scale mode produces the truest image fidelity. Four-bit gray-scale scans create a bit-map which codes each pixel for 16 different levels of print intensity, rather than just on-off, black-white. (Four bits of storage information for each binary sample equals 2 Exponent 4 or 16). Gray-scale scans leave the decision about which dots will be on and off, and at what intensity, to the printer. This allows a picture to be resized and manipulated with very little loss of quality.

Gray-scale scanning also produces files of over one megabyte in length, which are automatically saved in the standard Aldus format (called TIFF, for Tagged Image File Format). Gray-scale TIFF files can be printed, viewed or manipulated in *PageMaker*, *Image Studio* or *Adobe Illustrator*. The current *C-Scan* cannot handle a gray-scale TIFF file or send it to the printer once it has been dumped to disk. At the Macworld Expo this January, Abaton announced that the next version of *C-Scan*, due for release sometime in March 1988, will have the capability to view and print gray-scale TIFF files.

Size-Reduction Modes

The Abaton 300 SF and FB scanners perform in five size-reduction modes, 100% (one-to-one ratio), 80%, 66%, 60%, and 25%. The Macintosh displays images on the screen at 72 dots per inch, and dumps pictures to the ImageWriter at the same resolution. A LaserWriter Plus prints at 300 dots per inch. At 100%, the Abaton scans at a 300 dot-per-inch resolution, at 80% a 240 dot-per inch-resolution, and so on.

This means that the Macintosh screen, with a resolution of 72 pixels per inch, will display approximately one quarter of a 100%-full page image. You can scroll around the screen to edit, or redisplay the image in a fit-all-on-screen mode, or a 300 dpi simulation mode. These simulations let you look at a full 8.4 x 11.4 inch scan within one screen, but the dot density is too high to allow a true representation of the finer points of an image as it will be printed. The 80, 66 and 60 percent reduction modes are somewhat like Xerox reduction. They allow you to take a full page scan and reduce it to a smaller bit-mapped area. The fidelity of the image is not significantly affected by these reductions, and the print menu allows you to re-expand the size of the final copy again via PostScript. (There is also a considerable saving on disk storage space when scans are done at less than 100%.)

The 25% reduction is different from the others. It is not accomplished by the scanner hardware, but by algorithms built into the software. The 25% scan is slower, but also does some halftone simulation to compensate for the loss of detail in the lower resolution. The black and white contrast and the brightness can be adjusted before scanning. This reduction size is ideal for saving images to a *MacPaint* format. At 72 dpi a *MacPaint* file can save about one quarter

Buy from the LOW PRICE LEADER & Don't compromise SERVICE!

LEADING EDGE

Authorized Dealer

Model D

2 Dr/20 Meg	$729/999
30 Meg	$1059
Model D2 30 Meg., 1.2 floppy, 640K	$1599

NEC

HD w/20 Meg (New)	$2250
Multispeed	$1299
New Blacklite (EL)	$1499

FAX **$499**

— COMPLETE —

Plain paper, auto redial, memory storage, full feature.

hp

HP Laser Jet II including toner	$1599
Scan Jet w/ interface	$1379
Paint Jet	$999

Deskjet In stock

AT CLONE "10 MHZ"

40 Meg HD, 1 Meg RAM, 1.2 Floppy, Monitor, Zero Wait State

$1699

XT CLONE **$899**

Lowest Ever! 4.77 and 8 MHz, parallel, serial, mono monitor1 drive, 20 MG 640K

AST RESEARCH INC.

Premium 286 Complete System

w/40 Meg HD, High Res. EGA Monitor, 512K RAM, 1.2 Floppy, DOS, Clock, Serial, Parallel, EGA Card **$2399**

All Configurations In Stock

- MDL 140 original..... **$2450**

386 "NEW"
Call for Best Price

COMPAQ

Deskpro 286 "12 MHZ" In Stock	$1699
w-20 Meg/ w-40 Meg	2249/2549
Deskpro 386 "20 MHZ" 60 Meg	5599
Deskpro 386 "20 MHZ" 130 Meg.	6599
Portable II MDL 4 Original	2659
Portable III MDL 20/40	3499/4099
Portable 386 "20 MHZ" 40 Meg	5699
Portable 386 "20 MHZ" 100 Meg	In Stock

IBM Personal System II

MDL 25/30	$1099/1299
MDL 30 w 20 Meg	$1749
Model 50/80	$2699/CALL
Model 60, 40 Meg/70 Meg	$3095/3495
MDL II Proprinter	$399
X-24/XL-24	$559/729

ZENITH

LAPTOP 181	$1599
LAPTOP 183-10	$1999
NEW 183-20..In stock.	**$2299**

Seagate HARD DISKS

20/30/251	$265/295/399

CITIZEN

MSP 40/45/50/55	In Stock
MSP-35 Premiere	$449

VEGA

VGA NEW . . .In Stock	$299
Deluxe EGA	$199

Lotus

Lotus 1-2-3	$299
Symphony 3 1/2"	$349

Diconix Portable Printer	$339
NEC Multisync II	$569
Sony EGA 1302	$529

ALR 386

w/60 Meg HD, 1.2 floppy, 1 Meg RAM,

16 MHz/20 MHz **$2999/3299**

TOSHIBA

LAPTOPS

T-1200	$2199	T-3200	$3699
T-1100	$1350	T-5100	$4799
T-1000	$749	T-3100/20	$2999
T-321SL/341SL	$459/649	T-3100/10	$2399

EPSON

GQ 3500/EX 800	$1359/429
EX 1000/LX 800	$469/195
FX-86E/FX-286E	$299/435
LQ-500/LQ-850	$359/510
LQ-1050/LQ-2500	$679/849

NOVELL NetWare

NETWORKING - call W.L.A.
INSTALLATION AND SET-UP

DESKTOP PUBLISHING — CALL JOHN 542-8325

L.A. COMPUTER CENTER

(213) 542-3501
S. BAY
17013 Hawthorne Blvd.
(off 405 $ 91 Fwy)

Support Service, Availability
PO's accepted, Corporate accounts welcome
full line dealer
Consultants & Dealers Welcome
FAX (213) 312-9041

We ship UPS
(213) 478-0768
W.L.A.
12002 Pico Blvd.
(off 10 & 405 Fwy)

Xenon USA

Your Best Choice Distributor For **Seagate** & ***WESTERN DIGITAL***

Spring Specials

WESTERN DIGITAL

Controllers: for XT & AT Compatibles
WX1, WA2, RAH, RA2
Call for the best price in the west.
Network Cards: Starlan, Ethernet, Netware
Special: Ethercard + T-connector **$245**

Seagate Hard Drives

20 to 120 Mb
ST225, ST238, ST251, ST277
ST4000 Series
NEW! 3 1/2-inch 28 Ms 100 Series
Special—80 Mb ST4096 **$750**
120 Mb ST4144 **$995**

Large inventory of 3 1/2" floppy drives, hard drives and controllers.
Call for OEM and volume pricing.

Printers

Citizen 180D **$Call**
Toshiba 321SL **$Call**
Toshiba 341SL **$Call**
HP Laserjet II **$Call**
NEW! Jetware RAM & Fonts for HPII
1 Mb Jetware RAM **$295**

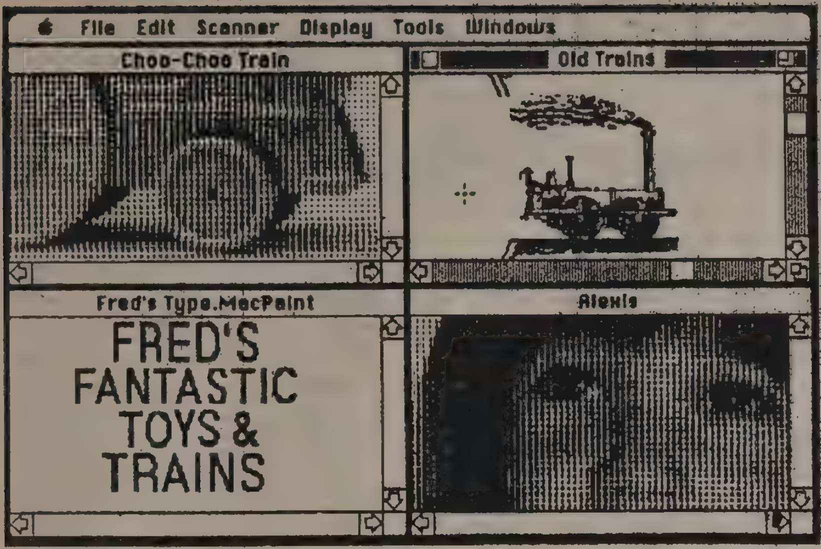
Systems

'286 AT compatibles from **$995**
'386 16 Mhz from **$1950**
We also carry IBM and COMPAQ
Xenon USA provides complete solutions assembled and tested to your specifications.

One Stop Shopping for all Your Hardware Needs.
Dealers, VARs, Resellers, OEMs Welcome—Call for special pricing.

Prices subject to change. Call for latest prices and availability.

Xenon USA •17795-F Skypark Circle• Irvine, California 92714
(714) 250-4438 • FAX (714) 250-4513



C-Scan lets you work in four windows at once.

of a 100% full page scan as an 8" x 10" screen. (The size limit on a *MacPaint* file is 576 dots wide by 720 dots high, or 8" x 10").

When you like what you see, after having adjusted the brightness (or contrast in the 25% mode), you can do simple editing with tools built into the program. The current *C-Scan* has scrolling, rectangle selection, line drawing and fat-bits editing. The version to be released in March will have a fuller complement of shape generating paint tools and insertable fonts. Any part of an image can be cut, saved or pasted into the Scrapbook at either 72 or 300 dots per inch with the current version. You can also open up to four windows on the screen to display different scans and cut and paste between them.

The Nine File Formats, And What They Work With

Pictures can be saved in nine different file formats: *C-Scan* Internal (condensed, takes less space), EPSF, TIFF, Compressed TIFF (CCITT), PostScript Text, FOTO, BMap, *MacPaint* and *SuperPaint*.

- EPSF (Adobe Encapsulated PostScript) is a file which contains text PostScript instructions plus the bitmapped image. Loadable in *PageMaker* and *Image Studio*, portable to PC environment for *PC PageMaker* or *Ventura Publisher*. Cannot be reloaded into *C-Scan*.
- **TIFF** (Tagged Image File Format) is the Aldus BitMap format which may contain gray-scale information. Loadable into *PageMaker*, *Image Studio*, *Adobe Illustrator* and other high end graphics programs. Halftones & line-art reloadable into *C-Scan*, gray-scale TIFF not reloadable.
- **CCITT** (TIFF Grp. 3) is a compressed TIFF file loadable into some Macintosh applications. Can be reloaded into *C-Scan*.
- **PostScript Text** is an all-ASCII file containing PostScript Language commands. Can't be reloaded into *C-Scan*.
- **FOTO** is a noncompressed format readable by *PageMaker* version 1.2.
- **BMAP** is a generic Quickdraw bitmap, a kind of *MacPaint* file with no header. For porting to non-Macintosh environments.
- **MacPaint** format is 72 dpi, maximum 8" x 10" size, universally loadable in Macintosh graphics applications.
- **SuperPaint** format creates a "main" *SuperPaint* file and extra "Laserbits" overlays to create the entire image.

Hands On

After a bit of experimenting, I decided that scanning black-and-white halftones and color photos at 60% of original size produced little image degeneration compared with the 100% scans. These images can easily be re-enlarged by 166% when sent to a PostScript printer, resulting in a picture the same size as the original. The print menu presents a shadowed mini-rectangle in a page-shaped box to show the size and location an image will have on an 8-1/2" x 11" page. You can center or otherwise adjust image placement with the mouse. If you're going to be working mostly in *PageMaker* or other programs which utilize TIFF and EPS files, 60% seems like the ideal scanning size. A 60% setting saves time during both scanning and printing, as well as storage space on your disk. You will also be able to see more of an image on one screen at 72 dpi.

One thing I like to do is port graphics over to MS-DOS for use with PC programs which will accept *MacPaint* files. Transferring *MacPaint* files to a PC can be done relatively easily. An Encapsulated PostScript file can also be sent to a PC via modem, TOPS, or MacLink. EPSF files can be loaded into *Ventura Publisher*, but you can't see the image on the screen or print it on a non-PostScript printer.

MacPaint files are accepted by a large number of Mac and PC applications, so it's useful to save graphics in this format. *C-Scan* offers a special *MacPaint* selection rectangle which will show the total on-screen area which can be saved as a *MacPaint* file. With a 300 dpi, full page image you can save about a quarter of a page (300 divided by 72 is about 4).

The 25% reduction option was designed mostly with *MacPaint* saves in mind. This reduction shrinks the

Want to save Time, Money, & Headaches?

GET SUPERSOFT's SERVICE DIAGNOSTICS

All the software, alignment diskettes, parallel/serial wrap-around plugs, ROM POSTs and extensive, professional documentation to provide the most comprehensive testing available for IBM PCs, XTs, ATs and *all compatibles* under DOS or Stand Alone. No other diagnostics offers such in-depth testing on as many different types of equipment by isolating problems to the board and chip level.

NEW: SuperSoft's **ROM POST** performs the most advanced **Power-on-Self-Test** available for system boards that are compatible with the IBM ROM BIOS. It works even in circumstances when the Service Diagnostics diskette cannot be loaded.

NEW: 386 diagnostics for hybrids and **PS/2s!**

For over nine years, major manufacturers have been relying on SuperSoft's diagnostics software to help them and their customers repair microcomputers. End users have been relying on SuperSoft's Diagnostics II for the most thorough hardware error isolation available. Now versions of Service Diagnostics are available to save everyone (including every serious repair technician) time, money, and headaches in fixing their computers, even non-IBM equipment.

All CPUs & Numeric Co-processors
System Expansion & Extended Memory
Parallel & Serial Ports
Mono, CGA, Hercules & EGA Adapters
All Keyboards & the 8042 Controller
All Color Graphics & Monochrome Monitors
Floppy, Fixed & Non-standard Disk Drives
Standard & Non-standard Printers
System Board: DMA, Timers, Interrupt, Real-time Clock & CMOS config. RAM

Join the ranks of XEROX, NCR, CDC, SONY, PRIME, ... who have bundled SuperSoft's diagnostics with their microcomputers at no risk because of our 30 day money back guarantee.

Service Diagnostics for PC, PC/XT, and compatibles only	$169
Alignment Diskette for PC, PC/XT and compatibles (48 tpi drives)	$ 50
Wrap-around Plug for PC, PC/XT and compatibles (parallel and serial)	$ 30
Service Diagnostics for AT and compatibles only	$169
Alignment Diskette for AT and compatibles (96 tpi drives)	$ 50
Wrap-around Plug for AT (serial)	$ 15
ROM POST for PC, PC/XT, and compatibles only	$245
ROM POST for AT and compatibles only	$245
Service Diagnostics: The KIT (includes all of the above—save $502)	**$495**
Service Diagnostics for all other CPUs (386, V20, V30, Harris, etc.)	$195
Diagnostics II is the solution to the service problems of users of all CP/M-80, CP/M-86 and MS-DOS computers	$125
ROM POST for PS/2 and compatibles only	$245
Alignment Diskette for PS/2 and compatibles (3.5 inch)	$ 50

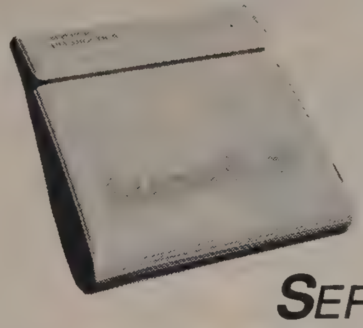
To order, call 800-678-3600 or 217-359-2112, FAX 217-398-5923, or write Supersoft

your microcomputer repair solution

SuperSoft

FIRST IN SOFTWARE TECHNOLOGY P.O.Box 1628 Champaign, IL 61820 (217) 359-2112 Telex 270365

SUPERSOFT is a registered trademark of SuperSoft, Inc.; CDC of Control Data Corp., IBM PC, AT & XT of International Business Machines Corp., MS-DOS of MicroSoft Corp; NEC of NEC Information Systems, Inc, PRIME of PRIME INC; Sony of Sony Corp



NOW IN SOUTHERN CALIFORNIA

"The Professionals in Computer Rentals"

PCR PERSONAL COMPUTER RENTALS ®

"The Professionals in Computer Rentals"

HOURLY • DAILY • WEEKLY & MONTHLY RENTALS
Local Delivery, Installation, 24 Hr. Service,
Pickup, Technical Assistance & Support.

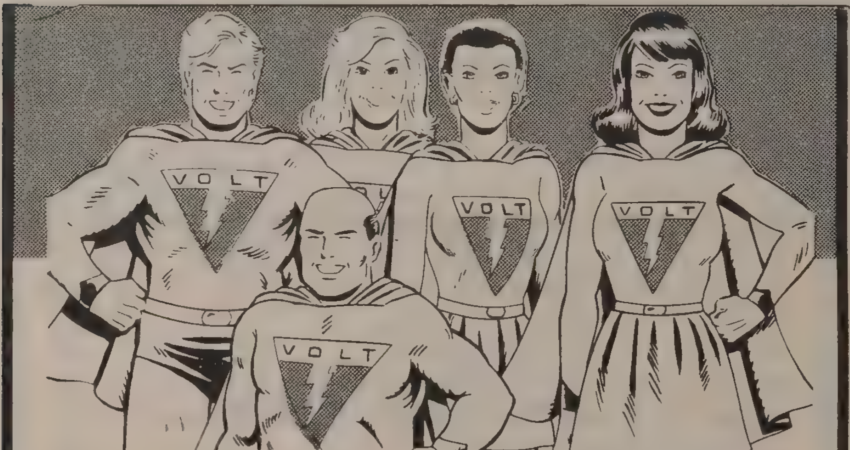
714-843-9262
7372 PRINCE DRIVE, SUITE 101, HUNTINGTON BEACH, CA 92647

1-800-322-1001
SOUTHERN CALIFORNIA

Each Franchise is independently owned & operated. Franchise opportunities available.

COMPUTER RENTALS Anywhere SM
LOCAL ONSITE SERVICE ANYWHERE
COAST-TO-COAST, FROM THE NATION'S #1
COMPUTER RENTAL NETWORK

1-800-922-8646 NATIONALLY



For super help
call
VOLT
TEMPORARY SERVICES

Volt's been providing effective solutions to temporary needs for over 35 years.
With high-energy temporaries well-versed in virtually every word processing system. Secretarial, industrial, accounting, telemarketing. You name it, Volt's done it.
So the next time you need high-energy temporary help – for one day to one month and beyond, call Volt.

THE HIGH ENERGY PEOPLE.
VOLT
TEMPORARY SERVICES

ANAHEIM (714) 879-9330
BURBANK (818) 848-2000
ENCINO (818) 990-5495
LOS ANGELES (Central) (213) 388-3271
LOS ANGELES (West) (213) 477-1330
NEWPORT BEACH (714) 852-1580
PASADENA (818) 796-8658
TORRANCE (213) 772-7757

Never a Fee E.O.E.

image to 1/4 of a 300 dpi page, letting you save an 8" x 10" area out of an 8.3" x 11.4" page at 72 dpi. Image resolution with the 25% scans is not as good as with the other dot densities, but the scanning process is done differently, via software instead of hardware. Some gray-scale information is abstracted from the image to compensate for the reduced resolution.

It is possible to save a full page 100% (300 dpi) image as four 72 dpi *MacPaint* files, and then use a utility like *FullPaint*'s LaserPrint to tile them together into one picture on a LaserWriter. *C-Scan* allows you to save various parts of an image, and then see what's left over by deleting the saved portions.

Since the *C-Scan* display can be toggled to select an image at either 300 dpi or 72 dpi, you can paste an image into the Clipboard or Scrapbook at either resolution. If you paste the image into *MacDraw*, at 300 dpi it will look lumpy and dark on the screen, but since it's saved in a line-art format, it will look right when sent to the printer. Pictures can be saved in *SuperPaint* format, loaded into *SuperPaint* and saved as PICT files.

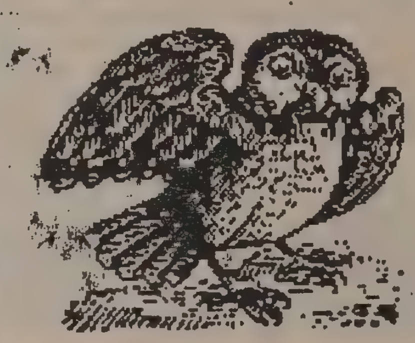


Image printed at 72 dots per inch

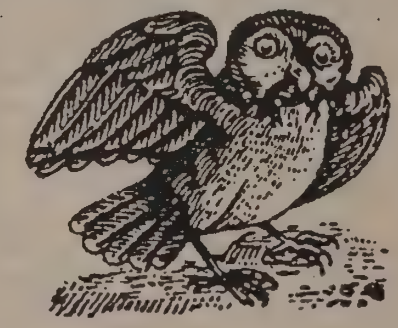


Image printed at 300 dots

The same image printed at 72 dpi (MacPaint) and 300 dpi.

The documentation for *C-Scan* contains instructions and tips for using saved images with *Adobe Illustrator*, *Ready, Set, Go*, *Graphic Works*, and *SuperPaint*, as well as *MacPaint*, *FullPaint*, and *MacDraw*.

One thing the documentation doesn't cover is that the 25% (slow scan) feature is a little temperamental. The maximum area which can be scanned at 25% is actually 8.3" x 11.4," rather than 8.4" x 11.4," as shown in the selection rectangle. If you select a larger width than 8.3," you will have to reboot your Mac. In addition, when I tried to scan several simple black and white images in line-art mode on a Mac II, the scanner went through its cycle and then the system bombed (even when the width was set to 8.3").

I reported these bugs to Abaton, and one of its tech people confirmed them. They hope to eliminate this quirk from the version of *C-Scan+* due to be released in March. Changing the brightness setting sometimes stops the bomb from coming up, and for some reason if you do the scan in line-art mode at 60% first, then repeat it at 25%, it works. The software works with no problem for halftone mode; the bug is only there for certain light-dark contrasts in line-art mode.

I experienced a similar difficulty with the gray-scale TIFF setting, bombing unless I selected gray-scale as the last thing I did in the configuration. Selecting gray-scale first, and then sizing the scan area or setting the reduction rate, got the bomb every time. Once I figured this out, I was able to select the gray-scale option last and had no problems.

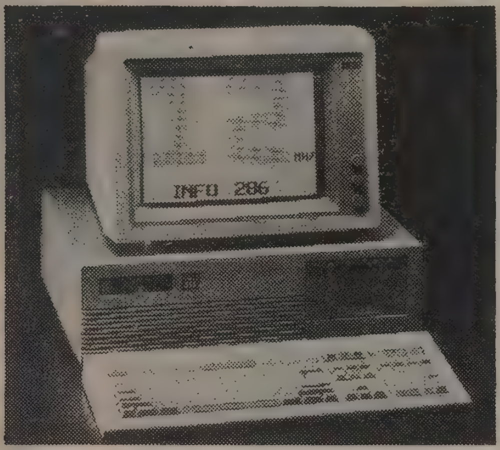
C-Scan+, the next version of the software, will let you edit and print gray-scale TIFF files without having to use another program. There will also be a feature called PanelScan. PanelScan will be installed in the Macintosh's Control Panel, letting you activate the scanner and edit images from within any application without having to quit it.

The Abaton system is a midrange system. The four-bit, 16-level grays are the maximum which can be printed on a 300 dpi LaserWriter. Some packages at a higher price offer 16-bit, 256-level grays which can be printed on a 1200 dpi Linotronic 300. Some less expensive packages offer no gray-level scanning and a more awkward user interface, but also get the job done for simple halftones. For optimum image handling capability, Abaton recommends purchasing *Image Studio* from Letraset to work with gray-scale images once they are saved to disk. The gray levels are not truly represented on-screen below the Mac II level. If your printing is going to be at 300 dpi, you may never miss them.

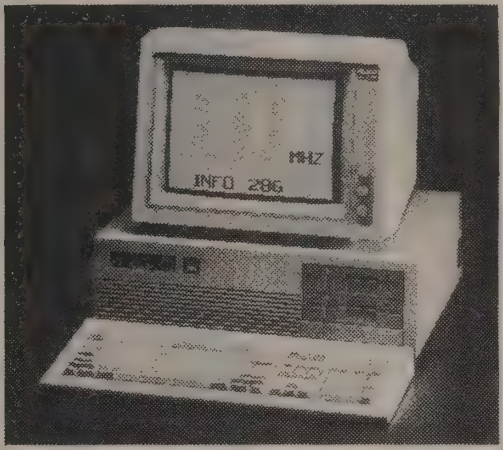
I found the Abaton system to be generally reliable. It is sufficient to capture simple photographs, black and white drawings, and templates for a program like *Adobe Illustrator*. It produces reasonable facsimiles of some color photographs. The software is easy to use, and offers many convenient features for saving and printing images. (Abaton, a Division of Everex Systems, Inc., 48431 Milmont Drive, Fremont, CA 94538, 800/444-5321. Scan 300/SF, with *C-Scan* 1.6 software, $1895; Scan 300/FB, with *C-Scan* 1.6 software, $2295. Scan 300/FB-MS DOS (OCR only) w/ software $2595. Interface Kit for Macintosh $295. Interface kit for MS-DOS $295. *C-Scan* 1.6 software for the Macintosh $400. *WordScan* software for MS-DOS $700.) ☐

High Quality, Low Cost IBM Compatible Computers

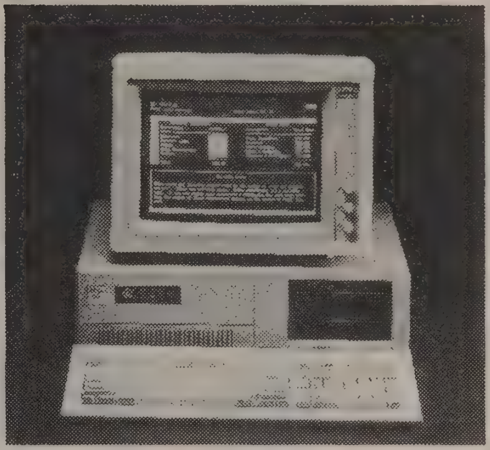
INFO-286 6/12 MHz



INFO-286 6/10 MHz



INFO TURBO XT



INFO 286-10 Starter Package

MONO-I:

- 80286 Microcoprocessor - 6/10 MHz
- 512K
- One 1.2MB Teac Drive
- Dual FD/HD Controller
- 200 Watt Power Supply
- Space Saving Case
- Clock/Calendar with Battery Back Up
- 101-Key Enhanced Keyboard (Keytronics)
- Hercules Compatible Mono Graphic with Printer Card
- 12″ Packard Bell Hi-Res

MONO II: w/ST-225 20MB Hard Drive.... **$1145**

MONO III: w/ST-251 40MB Hard Drive.... **$1345**

OS/2 Compatible

SPECIAL OFFER

Complete 10 MHz
286 System

$895.00
WITH MONITOR
($995 12 MHz Version)

INFO Turbo XT Starter Package

FEATURES

- 4.77/8 MHz
- 256K On Board Expandable to 640K
- One 360 Fujitsu Drive
- AT Style Case
- 150 Watt Power Supply
- Floppy Drive Controller
- AT Style Keyboard
- MGP Card
- Packard Bell Monitor

$439.00
COMPLETE WITH MONITOR

ONE YEAR WARRANTY PARTS & LABOR

FACTORY DIRECT PRICES

MS DOS 3.3 GW Basic for ONLY $79 with Purchase of Any System

ORDER NOW!! (714) 897-1562

MON-FRI 9-6
SAT-SUN 10-4

VISA MasterCard

MAY COMPUTERS *The Company You Can Trust*
— We Are The Manufacturer —
OUT OF CALIFORNIA 1-800-322-4556

8220 Katella Ave., #D
Stanton, CA 90680

CLONING THE PS/2

Chips And Technologies' Ron Yara On Proprietary Technology And The Diverging PS/2 And AT Standards

By Mary Eisenhart and Rob Beauchamp

If you've ever wondered where the heart of your PC clone or compatible came from, chances are it came from Chips And Technologies of San Jose. Except for those machines manufactured by Compaq, the vast majority of PC-AT clones built since 1985 have Chips And Technologies chipsets in them. Chips has has grown to dominate the OEM marketplace by providing higher performance at a lower price than IBM.

Then came the PS/2 systems from IBM. Frustrated at having its market share eroded by clone manufacturers who took similar off-the-shelf parts that comprised the PC and offered the computers at significantly lower prices, IBM created a line of computers that contained proprietary technology. Backed up by patents and copyrights and a horde of legal eagles, it appeared that IBM had developed a clone killer.

Who would be the first to clone the PS/2 and risk the wrath of IBM? the industry wondered.

An hour and a half after IBM announced the PS/2, Chips And Technologies bought its first PS/2 models and began the difficult process of reverse engineering the new computers. The reverse engineering was made even more difficult by the dearth of documentation provided by IBM. A year later Chips And Technologies is nearly ready to put its PS/2 chipsets on the market.

While on the surface it appears that Chips And Technologies is asking for trouble, the legal situation, not surprisingly, is much more ambiguous. IBM is licensing the utility patents on its proprietary technology. IBM has stated publicly that it is not interested in monopolizing the personal computer marketplace, but rather re-establishing its eroding market share. While not allowing clone makers to copy its designs directly, it is in effect licensing the right for companies like Chips And Technologies to make compatible chipsets using original designs.

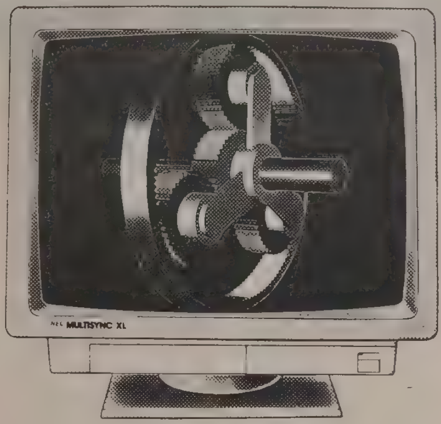
This is just fine with Chips, which prides itself on re-engineering chipsets to be faster, use less chips, cost less and still provide 100% compatibility.

The key, according to Ron Yara, vice president of business development, is maintaining a dialogue with IBM in order to ease the process of putting a PS/2 clone on the market. He maintains that with the proper licensing, the proper engineering and the proper agreements with IBM, chipset and clone manufacturers can successfully offer a PS/2 compatible without the legal wrangling many assume is inevitable.

Now in Stock from Mini Micro Supply.

GROWTH PEAKS
NEC MULTISYNC PLUS

NEC® MULTISYNC® PLUS



NEC® MULTISYNC® XL

NEC® MULTISPEED™ HD

NEC
MultiSpeed

NEC® MULTISPEED™ EL

We're Mini Micro Supply. The one company that fills large volume orders, fast. Because everything you need in PC's is in stock. From board level on up. Including NEC's new MVA 1024. With resolution up to 1024 x 768. Perfect for CAD and desk-top publishing applications.

That's why we're the ones for NEC's MultiSync monitors. Or NEC's MultiSpeed laptop computers.

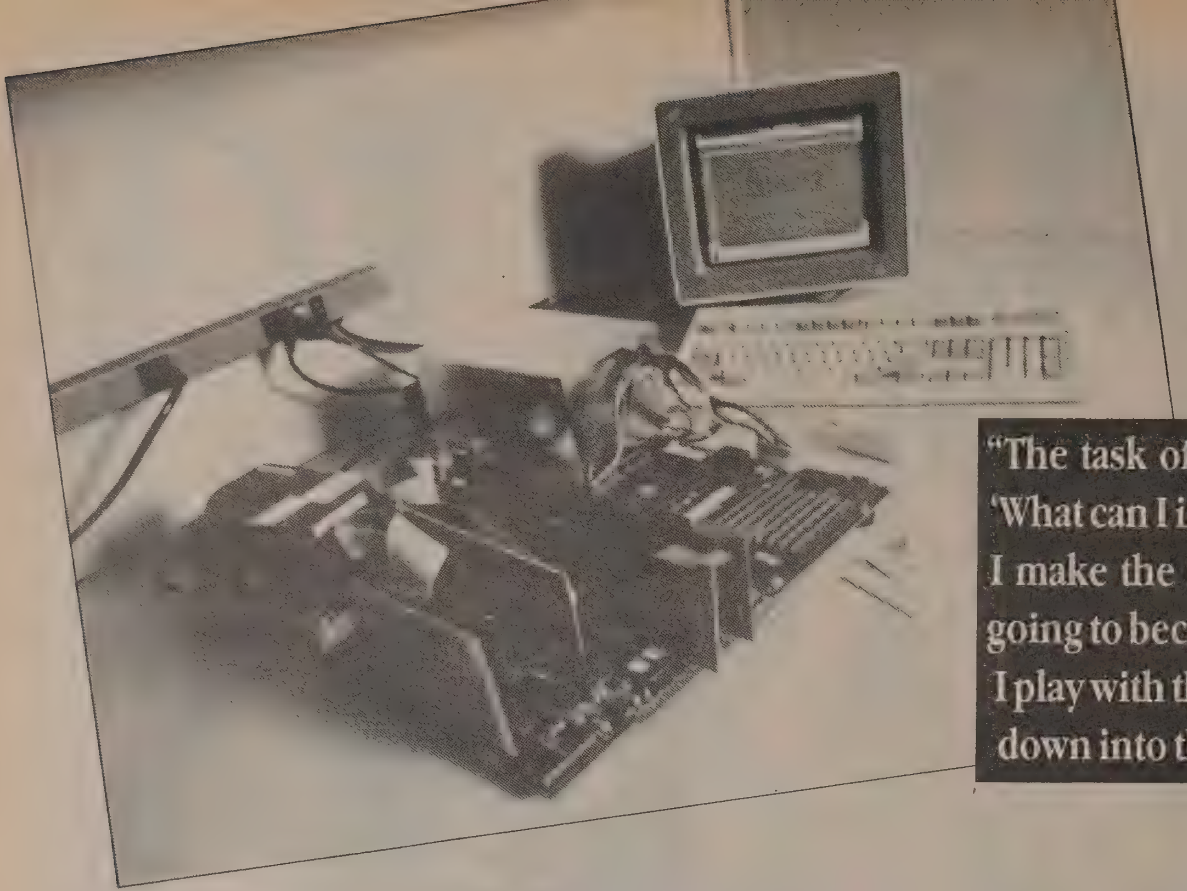
We have the quantities you need. Competitive prices. And complete technical support.

So look no further. Call today. (408) 434-6859. Or write Mini Micro Supply, 2050 Ringwood Ave., San Jose, CA 95131. For technical details call NEC Home Electronics (USA) Inc. at 1-800-NEC-SOFT. VARs and dealers only.

Mini Micro Supply. The one name worth remembering.

NEC is a registered trademark of NEC Corporation

The Reseller's Resource



> "The task of defining chipsets now is no longer 'What can I integrate, function-wise?' but 'How do I make the functions play together?' and what's going to become increasingly important, 'How do I play with the operating system?' I can't just look down into the hardware, I have to look upward."

A major question facing clone manufacturers, however, is will there be a market for PS/2 clones? Although sales of the new PS/2 are brisk, so are sales of AT class machines. Many businesses simply don't wish to move to the new machines due to the investments already made in the older technology.

What Yara predicts, according to talks with OEMs, is that the clone manufacturers will offer the PS/2 clones along with the AT machines, thus providing customers with a full range of low cost options.

Since Chips and Technologies does business mainly with OEMs, the average user may not be familiar with your company. Could you give us a little history?

The company itself was founded in January of '85. The basis for the company was developing standard integrated chipsets for microcomputer systems. The four major areas that we focused on were systems logic, graphics, communications, and mass storage or I/O functionality. The whole idea and the whole direction was to have complete solutions, because these are the major functions that make up any microcomputer.

By systems logic we refer to things including control of the processor itself, memory control, systems peripherals, DMA, I/O, keyboard interface, etc. Graphics is straightforward. One of the first things we came out with was EGA, then VGA, and also we were expanding that into flat panel displays. Communications, and then the I/O area.

In terms of structure of the company — as a semiconductor company we do not have any foundry or any processing. We don't have any waferfab or back-end packaging, testing, etc. For all of that we use outside foundries. We contract them with manufacturers in Japan, the US, and Europe — Yamaha, Toshiba, Fujitsu, NEC in Japan, National and Texas Instruments in the US, SGS in Europe. The goal behind that was, again, thoroughly straightforward. It's a huge investment to put up a front end and a back end — 50 to 100 million dollars. And it turns out in this kind of business that that is not where the value added is. The value added is here, in the design itself, in the integration of these functions within the microcomputer, and then the integration of these functions with the operating system and the applications environment.

So the company was started on that basis. Today we have 240 people. Our most recent quarter, which was the quarter ending in December, which is the second quarter in our fiscal year, which is June 30 — the second fiscal quarter was 32 million, first fiscal quarter was about 29, and analysts are saying somewhere in the 130s for the year, which is going to be up from 80 million in the previous fiscal year.

The basis for the business, where the revenue is coming from — in fiscal '88, better than 50% will come out of systems logic. In fiscal '87, better than 50% came out of graphics. The primary reason was that graphics, when we started the company, was a marketplace that was sitting there and waiting, and it was primarily an add-in card market, which meant you could get into it quickly and the business would grow very quickly. Systems logic business — the gestation period is longer by probably a year to a year and a half, because not only are you building the motherboard, but the chassis, the power supply, the full enclosure, and then working that through the channels.

So today we're in the dominant position in systems logic, for AT-compatible or 286- and 386-based systems.

Who are some of your clients?

Clients that have products that are announced — Tandy, NEC, Hewlett-Packard, Wang Labs, Multitech in Taiwan, Mitek in Taiwan, Apricot, Dell Computers, otherwise known as PCs Limited — these are all 286- and/or 386-based products.

DOS-based?

Yes. By some independent analysts, we have 75 to 80% of the compatible market, if you look at the number of customers.

Do they use Phoenix BIOS?

Yes, a lot of them use Phoenix BIOS along with our chipsets.

But you don't deal with it at that level?

No. We work with Phoenix. As a matter of fact, on our PS/2 road show and press announcement, Phoenix was there indicating that for the PS/2 product family, they are developing the PS/2 compatible BIOS that will work with our chipsets.

Looking at it from a technology standpoint, how we are getting to PS/2 products — in 1985 we brought in systems expertise, chip design or silicon integration expertise, and CAE tools to do chip development. And it was that combination of systems expertise — mainframe and workstation kinds of systems architecture, systems design — marrying that with chip design, real hardcore device and logic design, and using the tools, that allowed us to develop the first compatible chipset solutions. In 1985, when we introduced the AT 286 chipset, and the EGA, we solved the compatibility problem, we provided a complete integrated solution for that chipset, and also at the same time were able to increase performance.

This was the basis for platforms for AT compatibles as well as EGA, upon which most of the major manufacturers are building their product. In 1986 we extended the AT capability into 386. We introduced the first 386-compatible chipset, as well as taking EGA to a single-chip solution, supporting backward compatibility.

With the 386 we allowed users to run from 16 to 20 MHz, still maintaining AT compatibility. In order to do that we started with that platform which we developed in 1985, compatibility, and started to extend and improve the architecture. One of the ways was to decouple the processor, the CPU, from I/O. I/O was bound to 8 or 10 MHz operation, because that's where the compatible cards plug in. Processors were getting faster and faster — the 386 now runs at 16-20 MHz, soon to be 25 MHz. So it was important to be able to develop an implementation of the architecture that allowed the processor to move up in speed while retaining I/O compatibility. We were able to do that with the 386 chipset by introducing an asynchronous CPU, memory and I/O architecture. We also improved the system memory control on the microcomputer in order to improve performance without taking a huge penalty in buying very expensive DRAMs, by introducing page-interleaved memory control. And then we started building backward compatibility into EGA, providing CGA compatibility, monochrome and Hercules. That was in 1986.

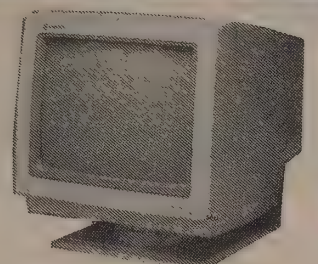
In 1987 we again built on this experience and expertise to bring high performance back into the 286 architecture. We started by introducing the 386 architecture for AT compatibles, and then came back in and enhanced the 286 chipset, by what we called the New Enhanced AT-compatible (NEAT) chipset — 286, 16 MHz operation, EMS 4.0 support, bringing more robust memory control — again, expanding functionality.

Also we introduced the VGA chip-

Grand Opening Sale

Your Computer Deserves A Great Monitor

SAMSUNG Monitors



MD-1252G (MG2525)

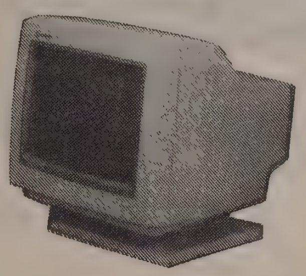
* 12" TTL Amber
* Tilt & Swivel Base

$67 Only

CD-1464W (CW4644)

* 14" RGB Color
* 0.41 mm Stripe Pitch
* Tilt & Swivel Base

$209 Only



CD-1453M1 (CM4531)

* 14" EGA Color
* 0.31 mm Dot Pitch
* Tilt & Swivel Base

NEW!

MD-1257A (MA2571)

* 12" TTL Paper White
* Flat Screen
* Tilt & Swivel Base

$92

Amax is the exclusive Samsung Monitor distributor to serve you in the South-West US. Please call for Multisync, VGA, flat screen and paper white monitors.

CASES & POWER SUPPLIES

AT style turbo XT case	$38
Compact size AT case	$52
150W switching power supply	$42
200W switching power supply (XT size)	$58

GRAPHICS CARDS

Monochrome graphics with printer port and color graphics emulation	$48
Color graphics	$41
GENOA Super EGA HiRes+	$180

PERIPHERAL CARDS

Floppy disk drive controller (XT)	$18
High capacity floppy drive controller (XT)	$42
Multi I/O (Disk I/O, XT)	$56
I/O plus (XT)	$44
AT I/O	$45
PC 384KB multi function	$65
XT 2MB expanded memory	$85
AT 2MB expanded/extended memory	$98
AT floppy/hard disk controller with cables	$120

MOTHERBOARDS

4.77MHZ/8MHZ turbo XT board	$79
8MHZ/12MHZ AT board	$295

KEYBOARDS

AT style with "click" (84 keys, XT/AT)	$48
Enhanced AT style with "click" (101 keys, XT/AT)	$56

BASIC SYSTEMS

Turbo XT with 4.77MHZ/10MHZ motherboard, 150W power supply and AT style case	$165
Turbo AT with 8MHZ/12MHZ motherboard, 200W power supply and compact size AT case	$415

FLOPPY AND HARD DISK DRIVES

EPSON 5.25" 360KB	$65
TOSHIBA 3.5" 720KB	$105
TOSHIBA 3.5" 1.44MB	$120
SEAGATE 20MB subsystem	$270
SEAGATE 30MB subsystem	$295

MODEMS

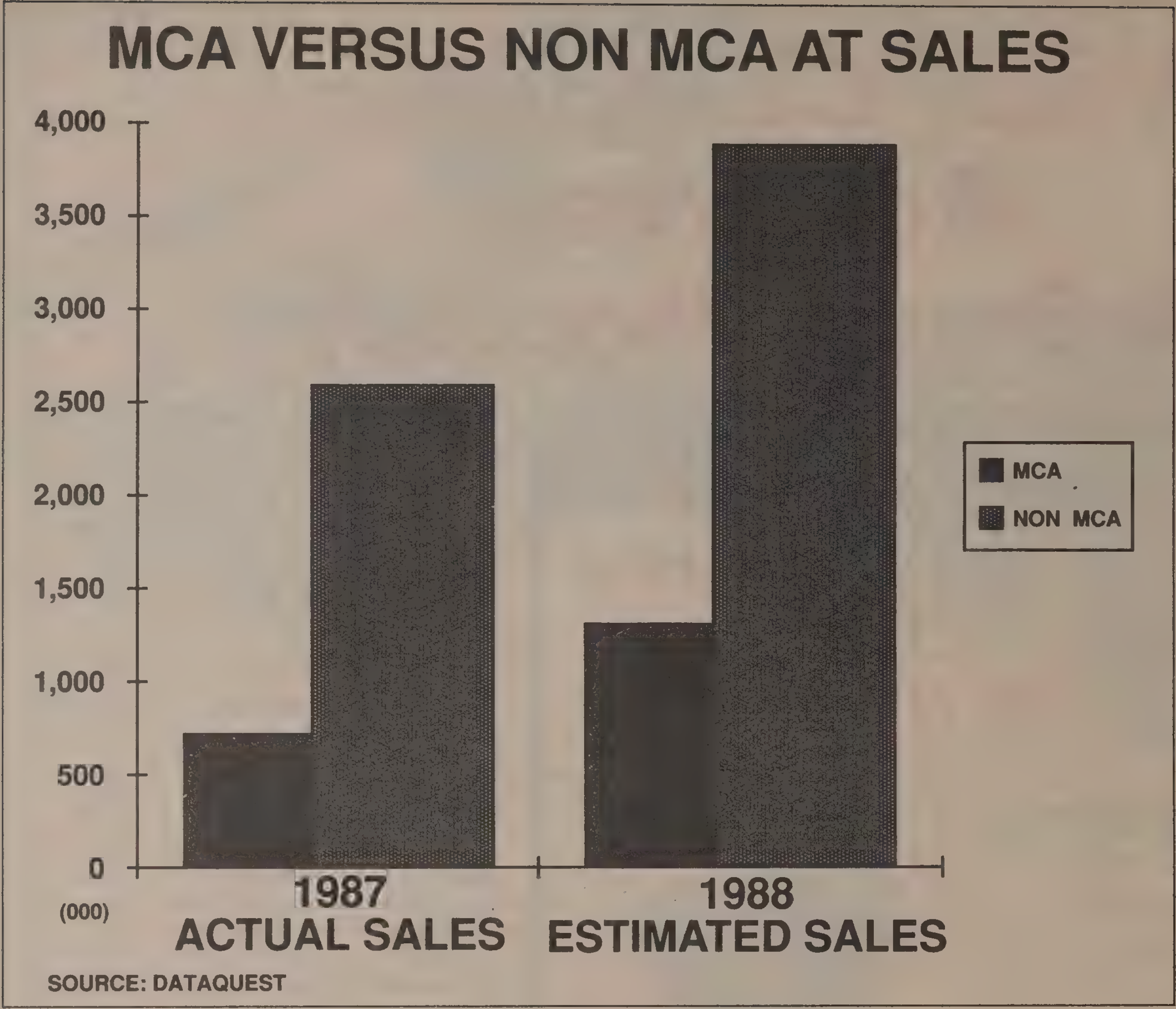
EVEREX 300/1200 baud internal	$82
EVEREX 300/1200/2400 baud internal	$175
SAMSUNG 300/1200 baud external	$89

COMPLETE COMPUTER SYSTEMS

System 88	$625
System 286	$950
System 386	$2095

amax

AMAX APPLIED TECHNOLOGY, INC.
3001-A W. Mission Rd., Alhambra, CA 91803
(818) 300-8828
Technical Support/RMA (818) 300-9152



SOURCE: DATAQUEST

set — that's started shipping. This one was a BIOS-level compatible chipset, which is supported in *Windows* 2.0, -386, and also we're working on 1.0 of OS/2 with Microsoft currently.

All of that expertise went into the PS/2 chipset, plus the experience of, today, more than three million chipsets shipped into the marketplace. These are the kinds of capabilities and functions we're building into the PS/2 chipset itself.

Product-wise, for chipset solutions we have the PC compatible solutions, as well as PS/2 compatible solutions. We introduced this set at the end of January. So we cover the low end, mid-range and high end with our products for both AT and PS/2 compatibles, as well as graphics in both areas.

The whole approach that we take in our PS/2 strategy — and it's really an overall strategy for the company — is that we provide, again, complete solutions. That is, based on compatibility, but that's just the platform. It's a requirement, it's not a value added. If you can't do that, then you're not really in the business. What we focus on is the added side, what we can do in terms of innovation.

We have to be able to provide that value added. We categorize that in three areas — performance, improved performance, certainly improved integration, number of components, and functionality in the chipsets. That's where we focus our PS/2 as well as our other product areas.

The compatibility side is very straightforward. In general the process that we go through, which is true for the AT chipset but it's certainly much more true for the PS/2 compatibles — we first start with logic extraction. That's kind of a nice euphemism for "we reverse engineer the system, including the components." So we have a register- and gate-level understanding of exactly what was going on within the chip as well as on the system board. 'Cause one of the things that IBM did a very good job of doing is not documenting their system.

The result of that logic extraction is the ability to implement — a *requirement* to implement both documented as well as undocumented functions. One of the important areas in documented functions is to make sure that the documentation reflects the hardware, because quite often it won't. Not knowingly, but because those things happen. The Micro Channel itself is a very well-defined bus. It's proprietary, but it's one of the things that they did a very good job of doing, documenting it, because they wanted it, from an add-in card standpoint, to become a standard. Therefore we had to make sure we were in full compliance with that specification when implementing the bus. We also had to do systems-level analysis, again because there is no theory of operation for the system, there is no system schematic for PS/2. That was important. And finally compatibility testing.

Again, this is part of our compatibility process, that we've already had in place. Today we have systems up at Microsoft for PCs that contain our 286 original AT chipset, our NEAT 286 chipset, as well as our 386 chipset. We ship different boxes up to Microsoft, put them into the development groups for OS/2, for DOS, for Presentation Manager/*Windows*, and for XENIX. The purpose of that is to allow Microsoft to do compatibility testing on new generations of software. Because our OEMs are their OEMs, and since we've been successful in penetrating those OEMs, it was important for both companies to do this kind of compatibility testing.

We are scheduled to do the same kind of compatibility work with Microsoft and PS/2. We will ship them fully configured systems up there that have our Model 50 as well as Model 80, 286 and 386 chipsets, to cover OS/2, DOS, XENIX, Presentation Manager, *Windows*. And we will also start putting systems into their applications group, people that do *Word*, *Works*, whatever else they're working on. Again, with the same goal, compatibility testing.

That takes care of what is required from the customer, which is "how do I make it compatible?" This is true for all of the products we do, including PS/2.

The other thing that we do is how we get the value added, the innovation. One of the ways we look at it — simple and straightforward. Integration, integration, and integration. And there we get fewer-parts compatibility and improved performance, just by improving the process technology, reducing the components. With PS/2, IBM started to put more of the functions onto the motherboard — graphics, I/O, as well as the systems logic. It was important, and it is important, therefore, to look at what we call functional integration, which is tightly coupling I/O with graphics as well as systems logic on the motherboard.

What IBM did with graphics, for example, is to physically put it on the motherboard, without logically improving access by the processor into display memory. There's a lot of improvement that you can gain by doing functional integration, mainly in the area of performance. Remove some of the bottlenecks, because you can make a different set of assumptions, given that the functions are physically close together so you can logically tie them.

The third area of integration is what we call systems integration. In this we are able to do things that are much more operating-system specific. With the CAE tools that we have, with systems design capability, we're able to move silicon a lot faster than they can move software. And basically that says we can fill the contours of software with silicon, as opposed to making it the other way around, so that you do become more operating system-specific, as well as applications environment, *Windows* or PM — again, you can do things in silicon that make PM run faster. As well as building in compatibility. So the task of defining chipsets now is no longer "what can I integrate, function-wise?" but "how do I make the functions play together?" and what's going to become increasingly important, "how do I play with the operating system?" I can't just look down into the hardware, I have to look upward.

It has to be optimized for a particular environment, so to speak.

That's right.

Is it just that your company has better engineers, or why didn't IBM do this in the first place?

I guess in one sense I'm not sure. (laughs) I know we have very, very good engineers. I think we have a good mix of engineers.

I'll give you the difference between a traditional semiconductor company and ourselves. A traditional semiconductor company would look upward in terms of the tasks it has to do. The first think it'll look at is "what can I do in terms of integrating the next set of functions?" The thing that they tend to pay least attention to is what's it going to mean to the operating system.

IBM • HP • SONY

QMD Invites You To Have It Your Way!

Desktop Publishing Solutions to Fit Your Taste

NEW FROM

TOSHIBA

T5100 & T3200 In Stock for Pick Up Today

• 386 Intel	• 286 Intel
• 40 MB HD	• 2 Expansion Slots (IBM)
• 2 MB RAM	• 40 MB HD
• EGA Plasma	Best Prices

INTRODUCING THE AST PREMIUM/386

INPUT — OUTPUT — CPU

SCANNERS

Princeton Graphica	$895
HP Scan Jet	$1275
Microtech 300A	$1595

MICE

Logi Tech Mouse with Driver Software	$65
Logi Tech Mouse (Bus)	$99
Genius Mouse	$49
Microsoft	$90

PLOTTERS & DIGITIZERS

Hitachi 11 x 11 Tablet	$470
Roland DXY-980 with Digital Display	$1270
Summasketch 1201ps	$399

INTEL CHIPS

80387-20	$725
80387-16	$475
80387-10	$299
80387-8	$245

LASER PRINTERS

hp™

HP Laser Jet II	$1625
HP 1 Meg	$349
HP Toner	$89
Tray & Fonts	CALL
Destiny Laser Act I 1.5MB	$1595

SOFTWARE

ALDUS

ALDUS Pagemaker	$479

XEROX

Ventura Publisher	$479

COMPUTERS

COMPAQ™ DESKPRO

386-20/60MB	$5410
386-20/130MB	$6799
386-20/300MB	$9449
Portable 386-40	$5649
Portable 386-100	$7049

IBM™

PS/2 Model 30, 2-3½"	$1199
PS/2 Mod. 30, 20MB	$1709
PS/2 Mod. 50, 20MB	$2649
PS/2 Mod. 60, 44MB	$3729
PS/2 Mod. 80, 40MB	$4799
8503	$178
8513	$499
8512	$418

AST™ RESEARCH INC.

Premium 286 Mod. 80	$CALL
Model 120	$CALL
Model 140	$CALL
Model 170	$CALL

PRINTERS

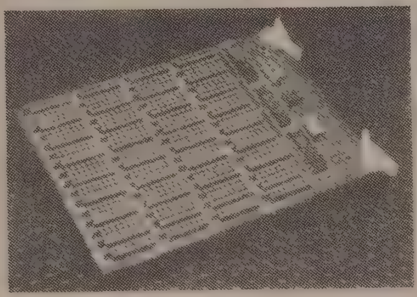
EPSON	
LQ 500	$369
FX 286E/EX 1000	$449/545
LQ 850/1050	$545/659
LQ 2500	$899
LQ 800 Special	$299
TOSHIBA	
321 SL/341 SL	$469/699
PANASONIC	
KX-P1592/KX-P1595	$445/495
SEIKOSHA	
MP1300 300 CPA	$285
MP5300 132 COL	$479
Citizen 55/45	$509/469
Diconix Portable Printer	$359
IBM ProPrinter II/X24	$379/589

Ribbons in for all printers

SPECIALS ONLY FROM QMD

Pacific Data Memory Boards for HP LZ II

0K	$189
1 Meg	$299
2 Meg	$729
4 Meg	$1349



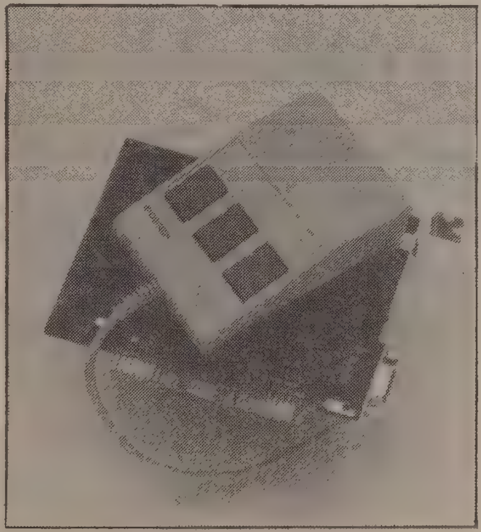
SOFTWARE

Lotus™

IBM Displaywriter IV	$285
Lotus 1-2-3	$299
Lotus Symphony	$399
dBase III Plus	$365
WordPerfect 4.2	$205
IBM PC DOS 3.3	$92
MS DOS 3.3	$86
PC MOS Single user/Multi	$169/512

SPECIAL OF THE MONTH

LOGITECH



Logitech Mouse w/EGA . . . $225

TAPE BACK UP SYSTEMS

Irwin 110 10MB Internal	$199
Irwin 120 20MB Internal	$355
Archive 125 MB	$795
Archive XL40 40MB Internal	$335
Archive ST600 60MB Internal	$499
3M DC-2000 Tape Cartridge	$21
Tandberg 3309 60MB Internal	$535
Everex 60MB Internal	$665
Everex 60MB External	$695
Sysgen Int DI-SY401	$395
Mountain	CALL
Wangtech	$CALL

LAP TOP COMPUTERS

NEC ZENITH TOSHIBA

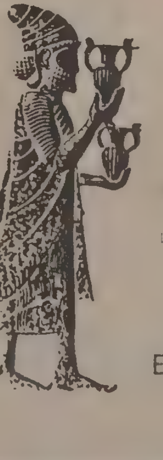
Toshiba 1000	$799
Toshiba T3100-20	$2995
NEC Multispeed-EL/HD	$1595/2399

HARD DISK DRIVES Seagate

Seagate ST225 20 MB w/control	$26.
Seagate ST238 30MB w/control	$299
Seagate ST251 40MB AT	$399
Seagate ST 4096	$790
Miniscribe 6053 44 Meg AT	$575
Miniscribe 6085 71 Meg AT	$799
Miniscribe 40 MB 3650	$369
Miniscribe 20 MB 8425	$199
Maxtor 114C Meg	$1795
Mountain Drive Card 30MB	$579
Plus Hardcard 20MB/40MB	$525/799

POLICIES:

- Blue Label or Next Day Delivery Available
- Letters of Credit & Corporate Accounts Accepted
- We accept certified checks, cashier checks, wired funds
- All orders over $500 must be paid by cashier check.
- Minimum order $100.
- Allow 1 week for personal & company checks (maximum amount $500)
- Prepaid orders get 1% discount
- Add 3% for Visa/Master Card Purchases
- Allow one week for shipping
- 15% Restocking Fee On all return merchandise
- Customer pays return merchandise shipping
- All prices subject to change without notice
- Add 4% for American Express Card Purchases
- HP is a registered trademark of Hewlett Packard. AST is a registered trademark of AST. Compaq is a registered trademark of Compaq. IBM is a registered trademark of International Business Machines.



QUALITY MICRO DISTRIBUTORS

VISA

(213) 478-9811
800-553-3339 in CA orders only
FAX (213) 312-5065
1-800-MICRO 86 (642-7686) in U.S.
West Coast Office 11651 W. Pico Blvd., Los Angeles, CA 90064
East Coast Office 313 Post Ave., Westbury, NY 11590 **1-800-338-9444**
For Technical Services Call Watson Line (213) 478-7004
QUANTITY PRICES AVAILABLE

TOSHIBA • MINISCRIBE • ZENITH • LOTUS • WEDGE

COMPAQ • NEC • AST • INTEL • EPSON • TEAC • SEAGATE

IRWIN • ARCHIVE • MINISCRIBE • KURTA

GDC News

SPRING 88
EDITION

Citizen Increases Prices

GDC Has Large Inventory In Anticipation Of Price Increase! We Filled All Of Our Warehouses.

Company Buys Wisely

CALL GDC FOR THE LOWEST PRICES In The United States

GDC Triples Warehouse Spacing

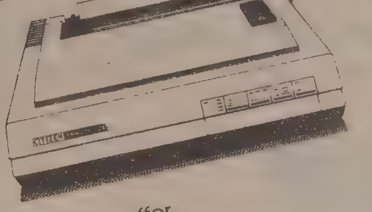
Offers *BEST* Pricing To You Our Customers

714-842-9252
714-842-3198

GDC
COMPUTERS

7712 "C" Talbert Avenue, Huntington Beach, CA 92647

CITIZEN™ PRINTERS from GDC



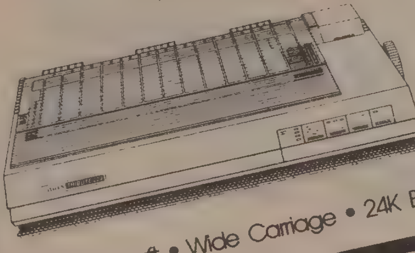
Tribute 124

Professional Graphics $429

200 CPS Draft • Narrow Carriage • 24K Buffer
Font Cards • Emulations Cards • Color Graphics Kit

Tribute 224

Quality & Versatility $589

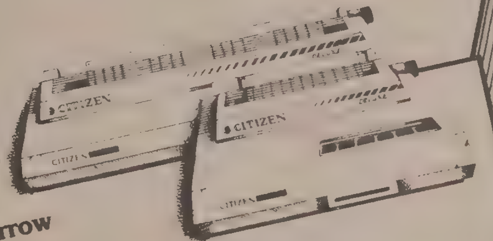


200 CPS Draft • Wide Carriage • 24K Buffer • Sheet Feed • Font Cards • Emulations Cards

MSP-15E

Workhorse on a Budget $319

160 CPS/High Speed Draft • Wide Carriage
Sheet Feed • 8K Buffer



MSP-50 Narrow

Premium Paper Handling $359

300 CPS Draft/50 NLQ • 8K Buffer • Font Cards • Color Graphics Kit

MSP-55 Wide

Full Range Output $459

MSP-40 Narrow

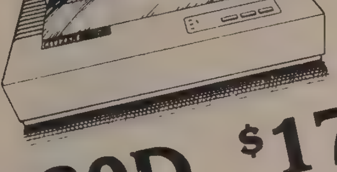
Economy $289

240 CPS/40 NLQ • 8K Buffer • Font Cards

MSP-45 Wide

Performance Printing $399

APRIL SALE ONLY
LIMITED TO
QUANTITY IN STOCK



120D

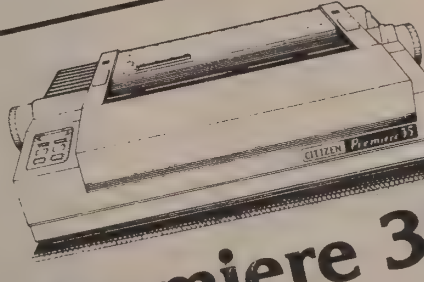
Hard Worker $159

120 CPS Draft/25 NLQ
4K Buffer • Narrow

180D

Performance $179

180 CPS Draft/29 NLQ • 4K Buffer • Narrow



Premiere 35

Daisy Wheel $469

35 CPS • Letter Quality • Wide Carriage
8K Buffer • Print Wheels • Sheet Feed

GDC COMPUTERS

714-842-9252
714-842-3198

7712 "C" Talbert Avenue, Huntington Beach, CA 92647
Shipping & Handling, Add UPS Charges. Prices reflect a 3% Cash Discount

VISA MasterCard

MICROLAN

FORMERLY ADVANCED PC PRODUCTS

ADVANCE TO THE LAN!

NETWORKING
NOVELL SPECIALISTS

NOVELL

NOVELL

Novell works with
ARCNET
OMNINET
ETHERNET]Hardware
Dealers/Consultants Welcome
Stop in to see our network demo

Call us for the **BEST** Price

NOVELL ELS FILE SERVER SPECIAL

Including:
- NOVELL ELS Operating System
- ARCNET Network Card
- TURBO 286 System for Network
- w/40 Meg Drive & 1.5 Meg RAM
- 1.2 Meg Floppy Drive
- Monochrome Monitor

$2410

MICROLAN 386 SYSTEM

$2750

COMPLETE SYSTEM
386 Motherboard
200W Power
101 Enhanced Keyboard
2 MB RAM on board
1.2 MB Floppy Drive
FD-HD Control Card
Monographic w/printer port
Hi Res Monitor

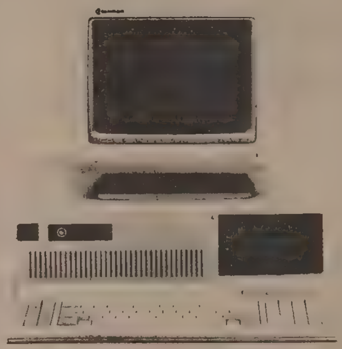
TURBO 286 SYSTEM:

$825

Complete System including:
6/10 MHz 80286 Motherboard
512K RAM
1.2 MEG Floppy Drive
Floppy Controller Card
Monographic card w/printer port
Hi Res Monitor
200 W Power Supply
AT Style Keyboard
AT LED Case

XT TURBO SYSTEM:

$525



Complete System Including:
4.77/10 MHz Motherboard
512K RAM
Floppy controller Card
360K Floppy Disk Drive
Monographic card w/printer port
Hi Res Monitor
150 W Power Supply
AT Style Keyboard
AT Style LED case

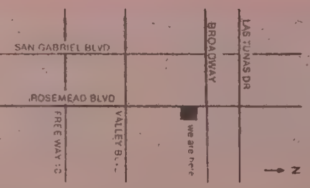
SPECIAL OFFER $65

Super Mouse
(Compatible with OS/2)
W/ Dr. Halo III software

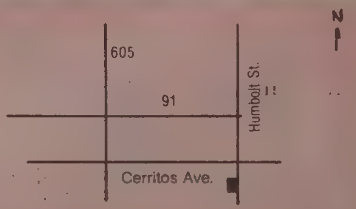
Monitor:		
Taxan Color		$295
Taxan EGA		$395
CTX Color		$255
CTX EGA		$355
Samsung TTL		$ 72
Samsung EGA		$355
Hard Disk:		
Seagate-225	20 Meg	$230
Micropolis	71 Meg	$870
Printer:		
Star NP-10		$160
Star NP-15		call
Panasonic 1081i		$190
Panasonic 1091i		$215
Accessories:		
Internal Modem 1200 BD		$ 85
External Modem 1200 BD		$105
Internal Modem 2400 BD		$165
External Modem 2400 BD		$185
Logitech Mouse		$75

North L.A. store
call for information

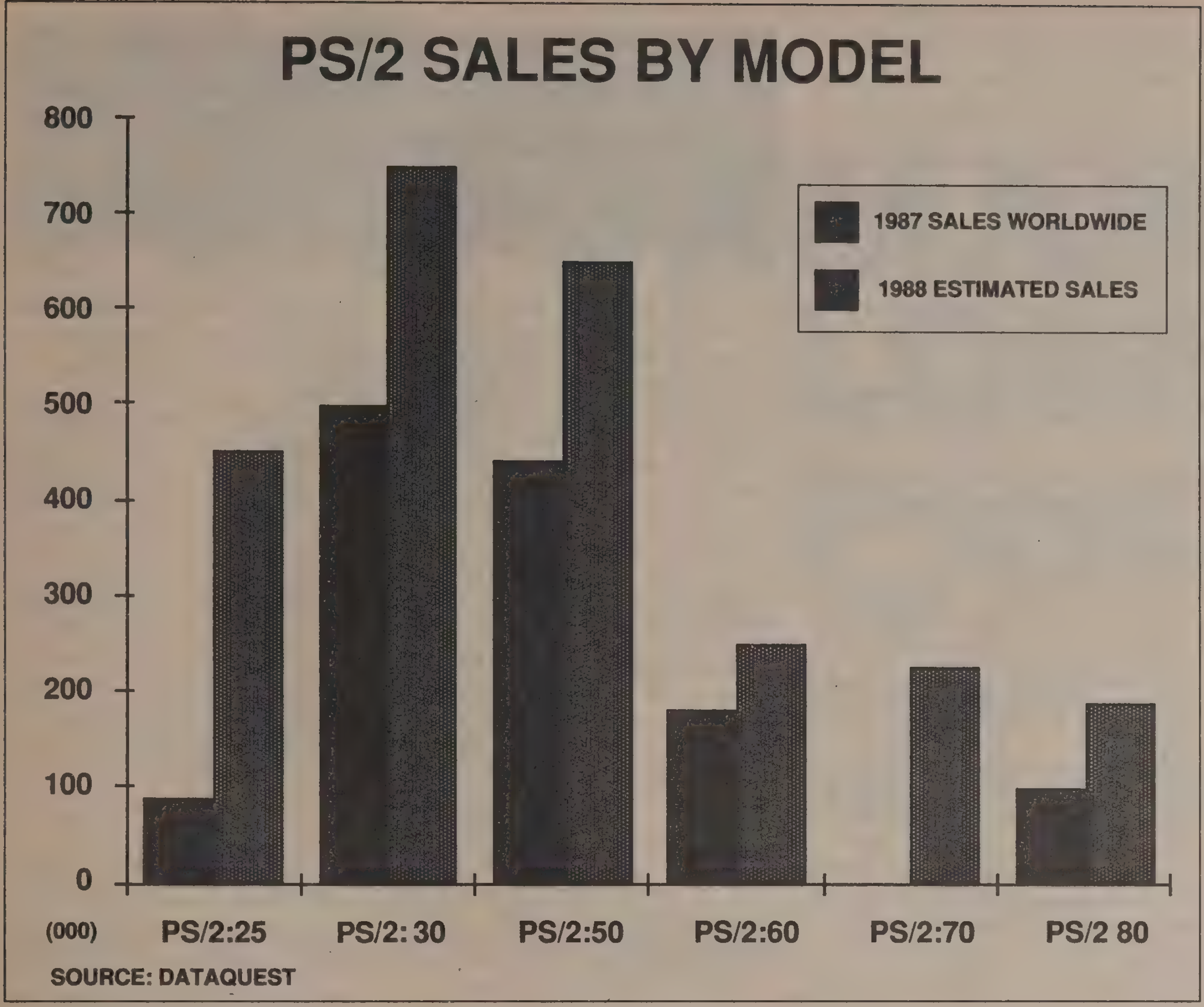
San Gabriel Valley:
5220 N. Rosemead Blvd., #A
San Gabriel, CA 91776
Tel: (818) 285-7560



Orange County:
10529 Humbolt St.
Los Alamitos, CA 90720
Tel: (213) 430-5378
(213) 430-0189



PS/2 SALES BY MODEL



SOURCE: DATAQUEST

Whereas at the beginning, at the outset, we structured the company to say that the set of problems we are solving is different. We're solving systems-level problems. And the last thing we will do is the integration. We actually start working the process backwards. At the end we finally define a partitioning for that integration and do the integration itself.

We also have over the past three years built a lot of expertise and understanding what compatibility is, working with the Microsofts to understand this area, and since we are addressing more than just one function, we understand how to integrate these things, functionally coupled together. I think it's difficult to build that kind of team very quickly, and we've been able over the past three years to build a team and build the experience level.

It certainly became clear when IBM had their briefing three weeks ago that IBM has fundamentally changed the rules on PS/2. When we started looking at the whole PS/2 process, it became clear that those rules were changing. A big emphasis on performance, mainframe level of performance.

The mainframe strategy of compatibility. And that basically said we're going to to start burying compatibility in hardware, in silicon. Proprietary software — in this case OS/2 Extended Edition, and an undocumented systems architecture, which they succeeded in doing. The other thing — they're taking a mainframe approach to product family, which means in mainframes, they have various models, it's not a single solution for what is now a very large market. The implication of that, the significance, is that compatibility is in fact a lot tougher. And the investment is a lot more significant now . By the time we're through with the PS/2 program, we will have invested close to 10 million dollars.

Because what you have to do is address about 20 years of IBM technology?

A lot of that technology, plus we're breaking new ground in terms of where we go to put the value added, the innovation.

And IBM has never gone out of its way to tell people what it was doing technology-wise...

That's right. And there's certainly a stronger emphasis on performance. A closer coupling of hardware and software. And a lot more products a lot more often. And that's exactly what IBM did three weeks ago. Saying our strategy is for the product family, that it will in fact be product family, so that the niches that they leave between products that they introduce will be narrower and narrower and narrower, in terms of customers trying to shoot between it. And that's where we are today.

In January we indicated that we would start sampling our Model 50 chipset this month, which we are doing, and for Model 80 we would be sampling in the April-May time frame, and we're on schedule for that.

As far as the level of interest in PS/2 — after the product introduction we spent two weeks on the road, worldwide — we held seminars in Paris, London, Boston, Toronto, San Jose, Taipei, Tokyo, Seoul — more than 1500 people at seminars in two weeks. We visited more than 50 customers in the same two-week period, presenting the PS/2 chipset solutions. The level of interest is very high, the level of activity is high. The kind of things others are doing are to develop PS/2 solutions, not as a replacement for ATs, but being able to offer their customers a PS/2 alternative if they choose to have that, as opposed to saying "this PS/2 will replace my AT product line." None of them are taking that kind of position.

There was an opportunity that IBM created when they stopped their AT in favor of PS/2. And the AT market today is a very, very strong market, and will continue to be very strong. Products that will be introduced will be complementing, but with higher performance, certainly higher functionality, and higher pricing, 25% price differentials.

From the standpoint of a user, what would be the practical advantages of buying a machine based on your technology versus buying a nice vanilla PS/2?

We need to provide improved performance, improved functionality, and the price competitive with IBM. When you're competing with IBM, you need to be better than them.

Just as the AT compatibles offer quite a bit of value over what IBM has, the same groundrules apply to PS/2. And they will be successful, and they will apply.

One of the things that we did was to summarize in the areas of performance. We will be able to offer up to 2x the performance of an IBM Model 50 — keep in mind the Model 50 is a 10 MHz, one wait state machine. It'll come from several areas — one is the improved Micro Channel throughput, the other one is this functional coupling that I talked about. Being able to improve processor access into display memory for VGA. These are the kinds of numbers we look at, and know that we can achieve.

In terms of integration, the number of components, on the Model 80 IBM's implementation is about 179 chips. We will be able to reduce that to 66 components, plus memory.

What's the practical impact of that?

You would probably be able to easily get Model 80 functionality into a Model 50 chassis, or better yet into a Model 30 chassis. Full 32 bit performance, 20 MHz operation, and a very small-footprint desktop machine.

On the 286 Model 50 compatible, the Model 50 is about 119 components. We take that down to 68 components. Again, smaller package, lower power supply requirements, higher performance.

And then we've also improved functionality — EMS support, and in VGA we're adding a graphics cursor for improved performance. Memory interleaving, asynchronous control, asynchronous architecture. Those are the kinds of things that, from an end user's standpoint, are the building blocks to allow the compatibles to provide that added value over IBM. We haven't even addressed what is possible on the I/O side. Higher access time disks, higher capacity disks, SCSI for easily expanding I/O capability, etc. So there are quite a few other things that the OEM will do to improve the overall performance of the machine, improve its value to the customers.

Are any OEMs publicly committed to building machines based on these chipsets?

No. Not publicly.

Again, we work with customers well in advance of actual products being shipped.

Well, the question that's on everybody's mind is that there's IBM, sitting there in Boca Raton with its heavy

artillery trained on you, waiting to blow you out of the water. Obviously you wouldn't be doing what you're doing if you thought that was a real hazard. So what are your views on this whole situation?

It's very straightforward, and with our customers it's also very straightforward. Because IBM's public statements have been that they will license their utility patents. We have been in discussions with IBM from early on, and we encourage our customers to hold discussions with IBM. There's no reason not to. And because what's at stake is a very large market, this notion that a compatible manufacturer would put a product out without talking to IBM just to test the water doesn't make sense. There's just too much at stake for them to do that.

So if you were running a business, then the straightforward thing to do, I think, is to go and talk to IBM. And work out agreements. We're certainly doing that, and we encourage our systems manufacturers to do that.

I don't think IBM is intending in any way to use this as a barrier to preclude competition. The industry has matured to the point where intellectual property rights have to be respected by all parties. There are provisions for doing that, and IBM has indicated that it intends to protect its intellectual property at the same time its public position concerning utility patents is that there will be licensed utility patents on a non-discriminatory basis, on similar terms and conditions.

But as I understand it, licensing utility patents and licensing the Micro Channel, so to speak, are very different things.

Oh, absolutely. When one talks about licensing the Micro Channel — which means "here is what you need to build Micro Channel, and we'll license you that" — there's no reason for a company to do that. The utility patents are fundamental functionals, as opposed to a license for the Micro Channel.

> "This notion that a compatible manufacturer would put a product out without talking to IBM just to test the water doesn't make sense. There's just too much at stake for them to do that."

I think IBM's statements have been that they won't license Micro Channel. That's very different from licensing utility patents, which contain some of the fundamental functions. When you receive a utility patent, it will probably not refer to Micro Channel per se, but incorporate one or two of the functions. There may be any number of functions you need to implement Micro Channel.

But given what they will license, you can reverse engineer the rest?

No. You still need to check that those utility patents that are incorporated in MicroChannel, if there is a patent for them, need to be addressed by licensing. We'll still go through a process of developing the Micro Channel, functionality chipset, etc.

In such a way that it doesn't infringe on anything proprietary?

Those things that are proprietary are utility patents or copyrights. There are copyrights and utility patents. Utility patents you cover by licensing. Copyrights you cover by making sure that if there is any microcode — this is pertaining to silicon — you provide an alternate way to implement that microcode. Number one, from a silicon standpoint, you don't take IBM's silicon and take a photo copy of it, replicate it identically. Some mask work is a protected, copyrighted piece of property. And so in the process of reverse engineering you can't purely copy that mask work.

You have to achieve the same thing in a different way.

That is correct.

So infringing on utility patents you cover by licensing. Copyrights you cover by the reverse engineering process.

You will have OS/2 machines at Microsoft for compatibility testing, and this is something you have an existing agreement with them about. That being so, it seems like Microsoft, which after all has a vested interest in keeping IBM happy, is implicitly endorsing the compatible market as well. Is that so?

You have to start with the fact that they are planning to market OS/2, and their marketplace is IBM plus the compatibles. It's clear that compatibles are addressing the AT and XT marketplace, they will address PS/2. Will Microsoft support both customers? I would assume so.

> "It's clear that compatibles are addressing the AT and XT marketplace; they will address PS/2. Will Microsoft support both customers? I would assume so."

It's really Microsoft's place to position what their public stance is concerning PS/2 hardware compatibles. From an OS/2 standpoint, MS-OS/2 is going to run on compatible DOS machines, and I assume that the goal is to make sure it also runs on compatible PS/2 machines.

When is it likely that customers will be able to buy a PS/2 compatible machine?

One of the things that we talked about in January at the press conference is that we estimated sometime midyear. We think that's still is a good date.

Speaking in the middle of March, you still think that by, say, July 1, there will be machines?

There will start to be machines.

At the Model 50 level or the Model 80 level?

Probably both. The impact volume-wise — we look at a mid- to end-of-'89 time frame, however. Because the AT marketplace is still so very strong, and performance-wise it's 12 MHz, 16 MHz 286es, 16-20 MHz 386 machines. And I think you'll see additional products being announced that support higher-performance AT-class machines, particularly with our NEAT AT chipset, some of the functionality to make OS/2 run faster.

So the NEAT chipset can run OS/2 just the way it is.

Oh, right. And with the added improvement in it that is also in IBM's Model 50, which is the fast CPU reset, to go from real mode to protected mode on a 286, which is currently a problem. So we put some of that functionality in hardware on the NEAT chipset so that ATs with the NEAT chipset, which are going to be introduced this year, will do a very good job of supporting OS/2. MS-OS/2 is designed to run on both AT class as well as PS/2 class machines. So the user will still have benefit from AT machines — plus the fact that IBM three weeks ago said that they will continue to do enhancements on DOS. DOS is still going to be a different factor.

We've been hearing a lot that business customers aren't going for OS/2 at all, that they're continuing to specify AT-class machines.

And DOS machines will be around for a while, and DOS machines on 16 MHz 286es are great.

The point I was making is the volume impact of PS/2, we don't see till the end of '89. I think the value of the products that we introduced is that as the customers choose to make the decision to go with PS/2, they will have multiple sources for that — at the same time still being able to gain access to very, very good DOS machines that are 286- or 386-based AT compatibles. That's the real value that the OEMs, our customers, see in being able to offer a complete line of AT compatible as well as PS/2 compatible systems.

So, among other things, customers won't lose their files and investment in existing software.

Nor will the OEMs ask their customers to completely abandon all the training, all of the support, all of the service, all of the whole infrastructure that is built around an AT compatible, to create another one for PS/2. They could migrate over or continue both.

I guess the key from the end user standpoint is that there will be an alternative. There will be choices, and real choices; they don't have to select one over the other. But as they choose to, they can use either or both.

Is there likely to be a significant price difference between machines based on your technology and IBM's?

I guess I would leave that to the OEMs. The OEMs will have to provide value, and that could be significantly higher performance and functionality at parity, pricing-wise, or lower pricing with somewhat improved performance.

We have the enabling technologies that allow them to decide where to position it. With that we're very confident that they can compete.

Are you going to keep improving the PS/2 chips?

Oh yes. That has to be. It's a good platform to do those kinds of things.

What kind of goals are you shooting for?

We have a number of things that we are starting to discuss right now. But it's too early to tell our competitors. (laughs) ☐

TOP PERFORMANCE-LOWEST PRICE:

THE ATLANTIC 386 SYSTEM

Mono: $2395 Color: $2565

System Includes:
- 16 MHz 80386 Processor
- 1 MB On Board (Expandable to 4 MB)
- 200 W Power Supply
- AT Case
- AT Style Keyboard
- 1.2 MEG Floppy Drive
- 360K Floppy Drive
- Hard/Floppy Disk Controller
- Video Display Card
- Monitor
- RUNS OS/2 OPERATING SYSTEM

8 MHz XT Turbo Basic System $395

System Includes:
- 4.77/8 MHz Turbo Mainboard
- 256K on board
- One floppy disk drive
- 150 W Power Supply
- Case
- AT-style keyboard
- Video Display Card
- Floppy disk controller

Options:
Upgrade to 640K. . .$95
Multi I/O card 25

10 MHz XT Turbo Basic System $405

System includes:
- 4.77/10 MHz Turbo Mainboard
- 256K on board
- One floppy disk drive
- 150 W Power Supply
- Case
- AT-style keyboard
- Video Display Card
- Floppy disk controller

Options:
Upgrade to 640K. . .$99
Multi I/O card 25

12 MHz AT Turbo Basic System $850

System includes:
- 8/10 MHz Mainboard
- 512K on board
- 200 W Power Supply
- AT Case
- AT Style keyboard
- 1.2 MEG Floppy Drive
- Floppy drive controller (for 1.2 M FDD)
- 6/10 MHz System available . . . . . . Call

Options:
Upgrade to 640K. . . . . .add $45
Upgrade to 1 MB . . . . .add 145
FDD/HDD Controller . . . . .add 85

These are only a few of the system configurations we have for you. Call & reserve your configurations NOW!!

Monitors

TTL	
Packard Bell	.75
Parco	.85

RGB	
TAXAN 720	$275
Parco	.235

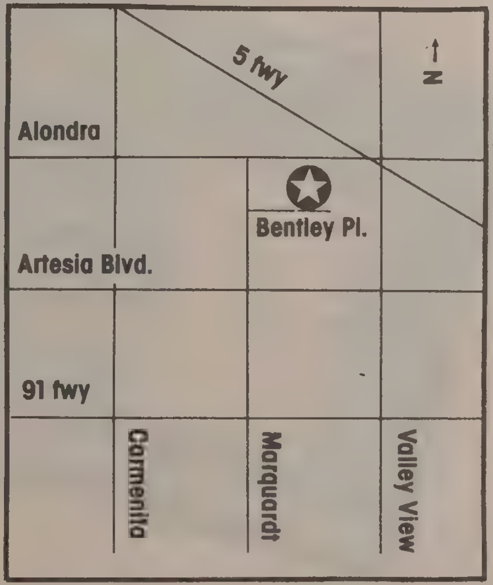
EGA	
TAXAN 770	.539
NEC Multisync	.599
EGA Autoswitch card	.149

Hard/Floppy Disks

TEAC 360	$80
TEAC 1.2MB	.99
Sony 720K 3.5"	.105
Sony 1.44 M 3.5"	.120
Fujitsu 360K	.75
Seagate ST225 20 MB w/ controller	.285
Seagate ST238 30 MB w/ controller	.295
Seagate ST251 40 MB	.440

Printers

Panasonic 1080	$179
1090	.219
Citizen 120D	.169
MSP 10	.279
MSP 15	.345

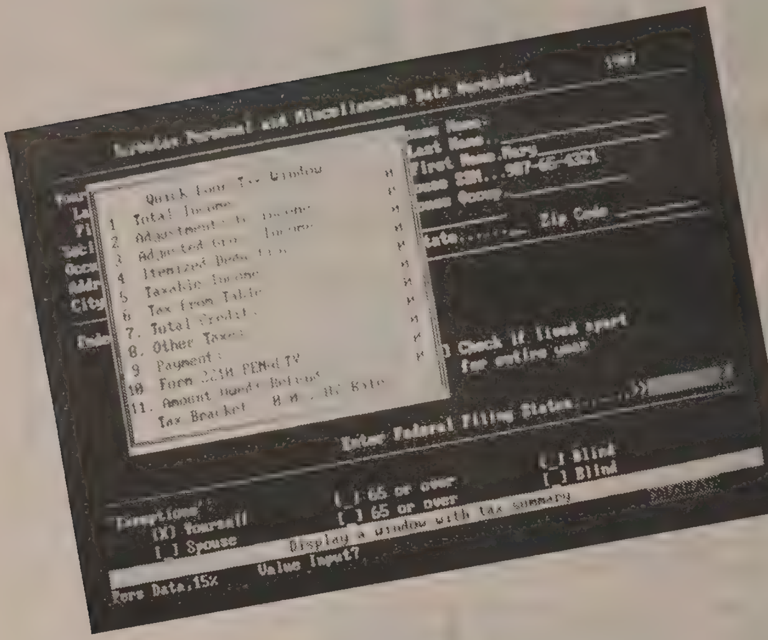


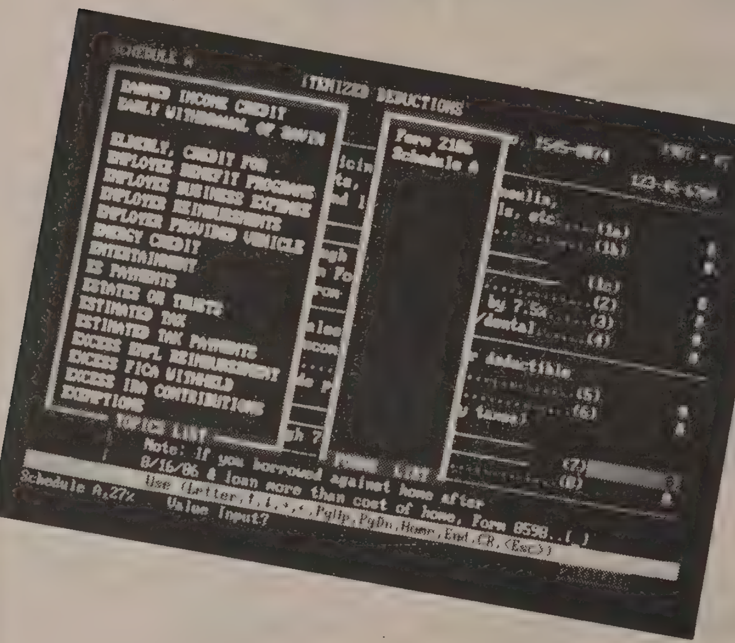
Items reflect a 3% cash discount. Shipping and handling charges extra. Prices and availability subject to change without notice. Dealer inquiries welcome.

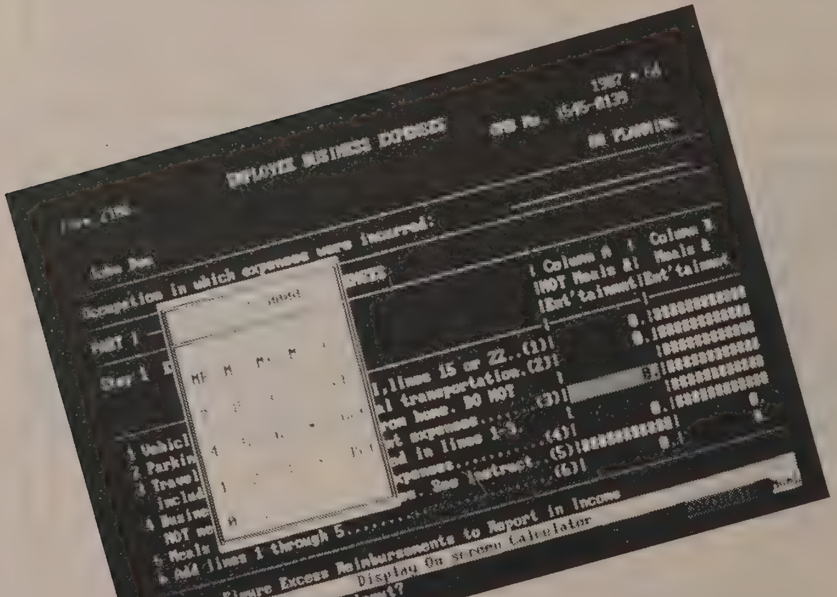
ATLANTIC
COMPUTER PRODUCTS
13839 Bentley Place #A • Cerritos

213-404-7767
Fax: 213-404-2608

DEALER INQUIRIES WELCOME • SPECIAL DISCOUNT PRICES TO DEALERS


Personal and Miscellaneous Data Worksheet
1987
Quick Look Tax Window
1 Total Income
2 Adjustments to Income
3 Adjusted Gross Income
4 Itemized Deductions
5 Taxable Income
6 Tax from Table
7. Total Credits
8. Other Taxes
9 Payments
10 Form 2210 PENALTY
11. Amount Owed / Refund
Tax Bracket
Last Name
First Name.Mary
Zip Code
Check if lived apart for entire year
Enter Federal Filing Status
Exemptions
(X) Yourself
[ ] Spouse
[ ] 65 or over
[ ] 65 or over
[ ] Blind
[ ] Blind
Display a window with tax summary
Value Input?
Pers Data,15%


SCHEDULE A
ITEMIZED DEDUCTIONS
EARNED INCOME CREDIT
EARLY WITHDRAWAL OF SAVINGS
ELDERLY, CREDIT FOR
EMPLOYEE BENEFIT PROGRAMS
EMPLOYEE BUSINESS EXPENSE
EMPLOYER REIMBURSEMENTS
EMPLOYER PROVIDED VEHICLE
ENERGY CREDIT
ENTERTAINMENT
ES PAYMENTS
ESTATES OR TRUSTS
ESTIMATED TAX
ESTIMATED TAX PAYMENTS
EXCESS EMPL REIMBURSEMENT
EXCESS FICA WITHHELD
EXCESS IRA CONTRIBUTIONS
EXEMPTIONS
TOPICS LIST
Form 2106
Schedule A
Note: If you borrowed against home after 8/16/86 & loan more than cost of home, Form 8598..[ ]
Use (Letter,↑,↓,+,-,PgUp,PgDn,Home,End,CR,(Esc))
Schedule A,27%
Value Input?


EMPLOYEE BUSINESS EXPENSES
1987
Form 2106
Occupation in which expenses were incurred:
PART I
Step 1
Column A NOT Meals & Ent'tainment
Column B Meals & Ent'tainment
Step 2 Figure Excess Reimbursements to Report in Income
Display On screen Calculator
Value Input?
Form 2106,17%

TurboTax from ChipSoft provides worksheets and IRS approved forms that lets your computer help with your taxes.

TurboTax
Personal Software
TurboTax
ProSeries Software
TurboTax

TurboTax:

An Ally On April 15

By Birrell Walsh

Ordinarily, we don't print reviews of things we are not finished with. We make an exception this month to let you know about a most useful product — before Tax Day.

If you grow livid every year at tax time, you might like having an electronic ally. We found one in *TurboTax*'s 1987 version. It is designed to let you calculate your Federal and State income taxes on your computer. It transfers information from form to form. It checks some of your entries for accuracy and permissibility — though not all of them. It includes on-line IRS tax publications. And in the end, if you have an appropriate dot-matrix printer, it prints the returns for you. Not bad, for one package.

You must wonder if it makes the awful experience of calculating taxes easier for the lay person. It seems to. Since it's not April 15 yet, we can't give you a final report, but here's our initial reaction.

TurboTax provides 31 forms and eight worksheets. It is likely that *TurboTax* has every form you will need for your personal and small business tax reports. We certainly found all those forms that we've used in the past. The worksheets allow you to enter all your information from your W-2 forms in one place, to calculate your depreciation, your IRA — even Passive Activity. That's such a lovely phrase; only the government and Zen Buddhists would want a report on it.

TurboTax has cross-referenced all its forms. What has been entered on one form is transferred automatically to other relevant forms. That means that you do not have to keep track of all the "from line 79 of form abcd to line 7 of form defg" foolishness that can so quickly drive you nuts. In the case of depreciation, for instance, it provides you with a worksheet. For each item you enter it provides a questionnaire that allows you to answer all the IRS's demands about your business depreciation. For those who work with computers this is particularly delightful, as computer equipment is "listed property" and subject to special reporting requirements.

What you see on your screen looks like the beloved IRS form itself, so you can follow along in IRS instructions. Behind the scenes, though, are a number of utilities. *TurboTax* has both a pop-up calculator and a pop-up notepad so you can do on-screen the calculations and the "what does *this* mean?" notes. You can also generate "supporting schedules" for summary items. If you want to make a detailed list of office expenses, you place the cursor on the appropriate line of Schedule C and then type **/X**. This "expands" the cell. You can then list the items and the cost of each. *TurboTax* will give you a running total of the items you have entered. When you type "Escape," the

LOWEST PRICE— HIGHEST QUALITY INVENTORY SPECIAL

EGA 30 MB HD 286 System (10 MHz) With Printer

- 80286-2 CPU
- 6/10 MHz
- 512K Memory on board (exp. to 1 MB)
- 1.2 MB Floppy Drive
- FDD/HDD Controller
- 200 W Power Supply
- EGA Adapter w/ 256K Memory
- EGA Monitor
- AT Type Keyboard
- AT Type Case
- **30 MB Hard Disk (ST 4038)**
- **High Speed Printer**
  - Dot Matrix and NLQ
- Fully assembled & tested
- 1 Year Warranty

*12 MHz Available

$1895

Reg. $3150

AVS 286 AT System (10 MHz)

- 80286-2 CPU
- 6/10 MHz
- 512K Memory on board (exp. to 1 MB)
- Clock/calendar w/ battery
- 1.2 MB Floppy Drive
- FDD/HDD Controller
- 200 W Power Supply
- MGPA Card (Herc. comp.)
- Hi-Res TTL Monitor (720 X 340)
- AT Type Keyboard
- AT Type Case
- Fully assembled & tested
- 1 Year Warranty

$985

Reg. $1293

30 MB AVS PC/XT w/ Printer (10 MHz)

- 8088-2 CPU
- 4.77/10 MHz
- 512K Memory on board
- 1 - 360K Floppy Drive
- **30 MB Hard Disk**
- FDC
- 150 W Power Supply (100/220 volt switchable)
- MGPA Card (Herc. comp.)
- Hi-Res TTL Monitor (720 X 340)
- AT Type Keyboard
- AT Type Case
- Fully assembled & tested
- 1 Year Warranty
- High Speed Printer
  - Dot matrix and NLQ

$1134

Reg. $1579

Miscellaneous: Multi I/O card, EGA card, Power supplies, cga cards, mono adapters, mouse. **Monitors:** RGB, EGA, TTL **Hard Drives:** 20 MB, 30 MB, 40 MB **Modems:** 300/1200 Baud, 300/2400 Baud

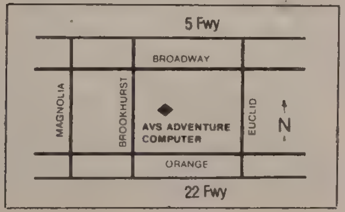
AVS

ADVENTURE COMPUTER

CALL FOR CURRENT PRICES!

386 16MHz/20MHz
System Available

Business Computer Systems
512 S. Brookhurst #8
Anaheim, CA 92804



Hours: Mon - Fri 9 - 6
Sat 10 - 6

ALL PRODUCTS GUARANTEED.
Cashiers Check - Money Order
C.O.D. - Shipped Immediately
Prices Subject to Change w/o Notice.
Some quantities may be limited.

714 533-8291

Clone MASTERS SERVICE CENTER

COMPATIBLES PC & COMPONENTS & SERVICES
16945 Bushard St., Fountain Valley, CA 92708
(714) 963-1090 and (714) 963-2703

★ WE SELL 386 SYSTEMS USING MYLEX BOARDS
ASK ABOUT OUR 16 MHz and 20MHz 386!
★ WE SERVICE MOST IBM and COMPATIBLE SYSTEMS!
INCLUDING UPGRADING YOUR EXISTING COMPUTERS
★ LAN ALSO AVAILABLE ★

COMPLETE BASIC SYSTEMS

New

Our 30 DAY MONEY BACK LIMITED WARRANTY is STANDARD for ALL COMPLETE SYSTEMS.

We Also Offer 90 DAY FREE ON SITE SERVICE to ALL BUSINESSES Within A 25 Mile Radius from Our Location for ANY PURCHASE OF 3 OR MORE SYSTEMS

(1) XT Compatible 4.77/10 MHz	$489.
(2) XT Compatible 4.77/12 MHz	$499.
(3) AT Compatible 6/10 MHz	$934.
(4) AT Compatible 6/12 MHz	$988.
(5) Baby AT Compatible 8/10 MHz	$929.

NOTE: Systems (1) and (2) above include Excellent Cases with Keylock, 3 LED, Reset and Turbo Switch Pushbuttons, 150 Watt Power Supply, Motherboard with 256K RAM, 1x360 KB Floppy Drive with Controller, regular 101 Key Keyboard, Monochrome Graphics Adaptor with Printer Port, and a Hi-Resolution Monochrome Amber Monitor with Swivel Base.
NOTE: Systems (3), (4), and (5) above have similar Feature Case, 200 Watt Power Supply, Motherboard with 512 KB RAM, 1x1.2 MB Floppy Drive, Floppy and Hard Disk Controller, regular 101 Key Keyboard, Monochrome Graphics Adaptor with Printer Port, and a Hi-Resolution Amber Monitor with Swivel Base.

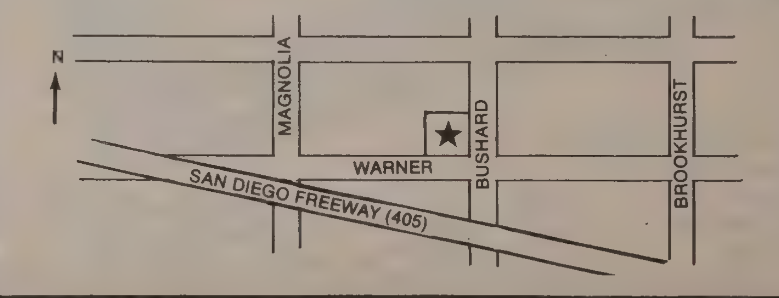
WE BUILD VERY
COMPETITIVELY PRICED RELIABLE SYSTEMS
Bring your Software and Visit our Showroom to put our Systems On Test!

★ *ALL ARE ASSEMBLED AND TESTED — READY TO USE* ★

UPGRADES

(1) With CGA Color Package, Add	$175.
(2) With EGA Color Package, Add	$384.
(3) Add 1x360 KB Floppy Drive	74.
(4) Add 1x1.2 MB Floppy Drive	88.
(5) Add 1x720 KB/3.5" Drive	96.
(6) Add 1x1.4 MB/3.5" Drive	119.
(7) Add 20 MB Hard Drive for XT's	282.
(8) Add 20 MB Hard Drive for AT's	235.
(9) Add 30 MB Hard Drive for XT's	309.
(10) Add 40 MB Hard Drive for AT's	328.
(11) Upgrade from 256K to 640K RAM	129.
(12) Upgrade from 512K to 1MB RAM	173.
(13) Epson LX-800 with Cable	209.
(14) NEC Multisync II Monitor	595.
Other Upgrades	CALL

★ *ALL PRICES ABOVE INCLUDE FREE INSTALLATION UPON REQUEST* ★
All Trademarks Acknowledged



total will be entered into the appropriate blank in Schedule C. You can have *TurboTax* print out one "supporting schedule" at a time or all of them at once.

TurboTax is part of a family of programs. The personal version is cousin to a professional tax-preparer's version. You can tell that a lot of personal and professional experience has gone into the design of the current version of the program. The forms that you have used to enter data are shown in highlighted video on the forms menu. There is a window in which you can see your tax obligation as it stands with the information you have entered so far. With one key you can jump back and forth between any two forms to see the consequences of a tax strategy.

This year the program also includes the IRS's instructions for many of the various forms. You can bring up those instructions and scan through them without leaving the form on which you are working. It is convenient to have everything in one place, and ChipSoft is trying to make their program replace all the forms, instructions, and scraps of paper that you have on your desk in April. We would say they have succeeded. So far we did not have to reach for a calculator, do a long-hand calculation, or find a tablet to make a note. Everything is stored in *TurboTax*.

When you have entered all the data, you can ask the program to examine all your forms for completeness. It will do so and give you a list of all those boxes you forgot to check and all the lines you did not fill in. Be aware, though, that it is you, the taxpayer, who are responsible for completeness.

When you have filled in the lines and checked those boxes, you can have *TurboTax* print the results. The IRS has approved *TurboTax*'s dot-matrix printed forms for submission. That means that if you have one of the supported printers, you can file the form you print. You will not need to fill out the forms by hand, or struggle to line up a form in your printer. You can also have printed all the supporting schedules that detail your expenses and contributions, to submit with your tax forms and keep for your records.

You can use *TurboTax* to plan your 1988 tax strategy. It comes preloaded with 1988 tax rates and rules. You can see what your tax situation is by entering data as often as you wish, and manage your finances accordingly.

What you see on your screen looks like the beloved IRS form itself, so you can follow along in IRS instructions. TurboTax has both a pop-up calculator and a pop-up notepad so you can do on-screen the calculations and the "what does this mean?" notes. You can also generate "supporting schedules" for summary items.

TurboTax offers state forms for California and 25 other states as well as the federal form. You can arrange to transfer data from the federal to the state form, saving all the re-entry and recalculation which is usually part of the state return.

These are the things I have discovered so far about *TurboTax*. It is particularly useful — I think it has saved me about $120 dollars already — but here are some things to be aware of when using the program.

It will not replace elementary tax knowledge. You need to understand how the forms interlock. *TurboTax* will not protect you from data-entry errors. If you list interest payments as $26 rather than $2600, *TurboTax* will not catch the error. It will pass the error through to all the forms on which it should be entered. You need to check your entries in *TurboTax* at least as carefully as you check hand-entered data.

If preparing taxes is a horror you just can't face, *TurboTax* is not for you. Your tax-preparer may well be using it, and it is best to let that person handle the matter for you. But if you fight your way through the tax-form thicket year after year, *TurboTax* is a worthy ally. (*TurboTax* version 5 (for 1987 taxes) $75 for Federal returns, $40 for California (or other state) returns. Requires: IBM computers or compatibles with 256K. ChipSoft, 5045 Shoreham Place, Suite 100, San Diego, CA 92122. 619/453-8722.) ☐

Copyright ☐ 1988 by Birrell Walsh. All rights reserved.

High Performance Computers & Affordable Prices with our ONE CALL — ONE STOP SERVICE!

TOSHIBA

T1100 PLUS LAPTOP

$1400

- Dual 3½" Disk Drives
- 512K RAM
- 4.77/8 MHz Selectable
- LCD Display
- Rechargeable Battery
- Parallel/Serial Port
- MS DOS 3.2 Included
- SideKick Desktop Organizer Software

10 MHz AT SYSTEM

MONO	$1270
COLOR	$1425
EGA	$1684

Complete System Includes:

- 10/6 MHz (Intel 80286 CPU)
- 256K RAM on board (exp. to 1 MB)
- 360K Floppy Disk Drive
- Hard Disk/Floppy Disk Controller
- Video Graphics Card
- Printer Port
- On-Board Clock/Calendar w/battery back-up
- AT Slide-In Case (Turbo switch, reset switch, 3 LED's)
- 220 Watt Power Supply
- Enhanced Keyboard

AT 386 MYLEX SYSTEM

MONO	$2745
COLOR	$2950
EGA	$3350

Complete System Includes:

- Intel 80386 6/16 MHz Keyboard Selectable
- 1 MB of 32 Bit RAM on the System Board (4 MB Optional)
- 64 KB of 32 Bit No-Wait-State CACHE Memory
- AMI BIOS
- Socketed for 80287 6/10 MHz Coprocessor
- Norton Rating (V4.0) 18.7
- Hard Disk, Floppy Disk Controller Card
- 1.2 MB Floppy Disk Drive
- Enhanced Keyboard
- 1 Year Warranty
- Made in the U.S.A.

CALL FOR 20 MHz SYSTEM

SPECIALS of the Month

M8 Serial Mouse (Logitech)

$39

Micropolis 1325 85 MB Hard Drive

$760

Sony 1303 EGA

$499

Keytronic Enhanced Keyboard

$42

FLOPPY/ HARD DRIVES

Fujitsu 360K, Black	$ 65
Fujitsu 360K, Beige	$ 67
Fujitsu 1.2 MB, Beige	$ 78
Sony 3½", 720K	$ 89
Sony 3½", 1.44 MB	$105
Toshiba 3½", 720K	$ 85
Toshiba 3½", 1.44 MB	$102
Fujitsu M2243AS, 85 MB	$950
Miniscribe M3650, Bare Drive	$290
Miniscribe 6053, Bare Drive	$545
Miniscribe 6085, Bare Drive	$749
Seagate ST225 with Controller	$252
Seagate ST238 with Controller	$280
Seagate ST251 Bare Drive	$375
Seagate ST251-1 Bare Drive	$425
Seagate ST4026 Bare Drive	$250
Seagate ST4096 Bare Drive	$850

MONITORS

NEC Multisync, EGA	$565
Samsung, EGA	$360
Samsung, RGB	$240
Samsung, Amber with Tilt & Swivel	$ 74

PRINTERS

NEC Pinwriter	$429
NX-1000	$179
Okidata 192+, 80 col, 200 cps	$310
Okidata 193+, 132 col, 200 cps	$490
Epson LX-800 9 pin, 80 col, 180 cps	$195
Epson FX-86E 9 pin, 80 col, 240 cps	$350
Epson LQ-800 24 pin, 80 col, 180 cps	$460
Epson FX-286E 9 pin, 132 col, 240 cps	$470
Epson EX-1000 9 pin, 132 col, 300 cps	$550
Epson LQ-1000 24 pin, 132 col, 180 cps	$575
HP Laser Jet II	$1745

PERIPHERALS

386 Mylex Mother Board	$1450
286 DTK Mother Board 6/10 MHz	$290
XT Turbo Mother Board 4.77/10 MHz	$ 72
Color/Composite/Graphic Adapter	$ 37
Mono Graphic with Printer Port	$ 45
EGA HEGA II Card	$ 99
Multi I/O 5 Functions	$ 50
Floppy Disk Controller, 2 ports w/Cable	$17.50
RS232 Serial Port Adapter	$ 20
Western Digital Controller, WDX1 with Cable	$ 60
Western Digital Controller, WA2 with Cable	$110
Game Card	$ 25
Top Sega 100% Genoa EGA Compatible (800 x 600)	$175
C7 Logitech Mouse	$ 69
C7 Publisher Mouse	$ 95

MODEMS

1200B Internal	$ 75
1200B External	$ 99
2400B Internal	$170

Smart-One, Everex, Mitsubu, U.S. Robotics, Capetronic and others!!

LH COMPUTER SERVICE, INC.

(714) 836-5534 • 836-5946

1415 E. McFadden Ave., Suite E • Santa Ana, CA 92705

ALL SYSTEMS ARE ASSEMBLED & FACTORY TESTED/2 DAY BURN-IN

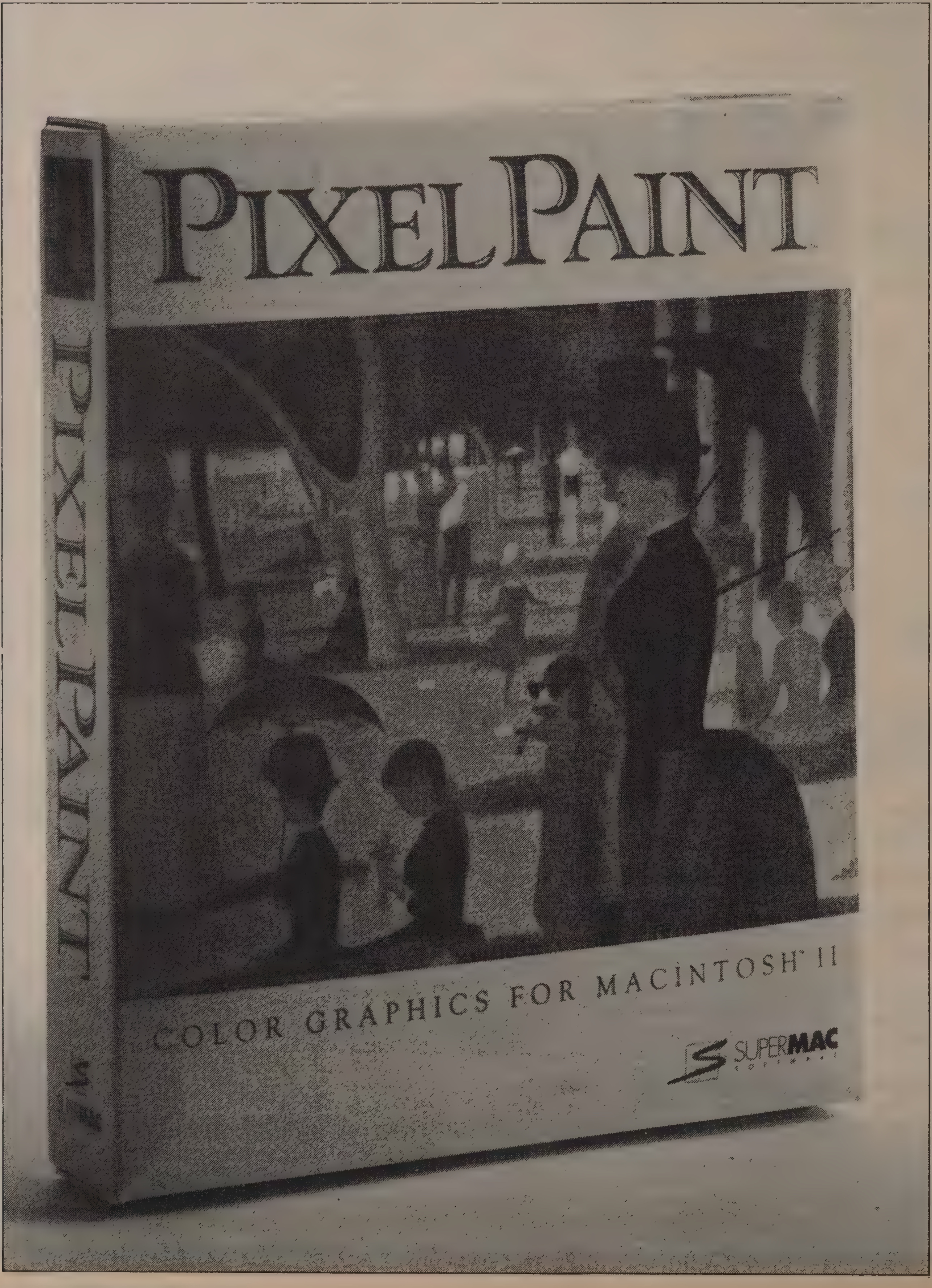
DEALERS & CONSULTANTS ONLY

All goods are brand new and guaranteed. All advertised prices already include a 3% cash discount for full payment by cashier's check, money order or cash. Personal or company checks must clear 3 weeks before we ship. Add 3% for credit card purchases. C.O.D.'s are accepted for UPS shipments only and require 20% paid deposit and $3.00 COD fee. No COD's to Canada, Puerto Rico, FPO/APO or P.O. Boxes. Shipping & insurance charges by UPS Ground: $5 (card/modem/drive/software), $10 (monitor/printer), $15 (computer/plotter), $25 (laser printer/UPS/copier). UPS Blue: 3X Ground. UPS Red: 4X Ground. P.O.'s accepted from government agencies, Fortune 1000 firms and major institutions. Calif. buyers add sales tax. Prices subject to quantity available, correction or change without notice. You may call for the latest prices. All trademarks acknowledged.

PixelPaint

Amazing Color On The Mac II

By Jim Wolcott



It's been four full years since the Macintosh wowed the microcomputer market with the introduction of Bill Atkinson's landmark *MacPaint* program. Through the years, graphics programs have evolved for the Mac, adding ever-increasing power and flexibility for image processing.

In black-and-white.

Last year saw the introduction of the Macintosh II, and the dawn of color for the Mac screen. To be precise, the *promise* of color for the Mac screen. Oh sure, Apple (and others) offered some "gee whiz" color demonstrations for the ColorMac, but nothing appeared on the software market to really harness the color capabilities of the new machine.

That's all changed with SuperMac Software's *PixelPaint*. To put things in perspective, *PixelPaint* is a Macintosh II *only* application. Not only that, you need a Macintosh II with at least two megs of RAM memory, a hard-disk drive, a color monitor, and a video card upgraded to display 256 colors.

With this mega-horsepower Macintosh equipment at hand, what does *PixelPaint* offer? My first brush with this program was with a couple buddies — the three of us having been Mac junkies since the machine's introduction. The result? We all sat, slack-jawed in disbelief, exploring *PixelPaint*'s capabilities — a marathon session that went from early evening till 5 am. Working with *PixelPaint* is a shock. A thrill. A gestalt shift that re-defines the Macintosh II's capabilities.

In spite of *PixelPaint*'s power and color-handling abilities, *MacPaint* users will feel right at home, with the familiar lasso, grabber hand, text tool, paint bucket, spray can, brush, pencil, and eraser available from the tool palette.

In addition, *PixelPaint* offers line and arc tools, and a variety of "shape" tools: rectangles, circles, polygons, and tools for odd rounded and polygon shapes. These objects can be created as "hollow," (no pattern or shading), or "filled" (patterns and/or shading). For these objects, a variety of line widths are available: the line widths can be selected directly from the palette, or can be user-defined. More important, these widths can be selected independently for both the horizontal and vertical axis. For example, a circle can be created that's "fat" on the sides, and "skinny" on the top and bottom.

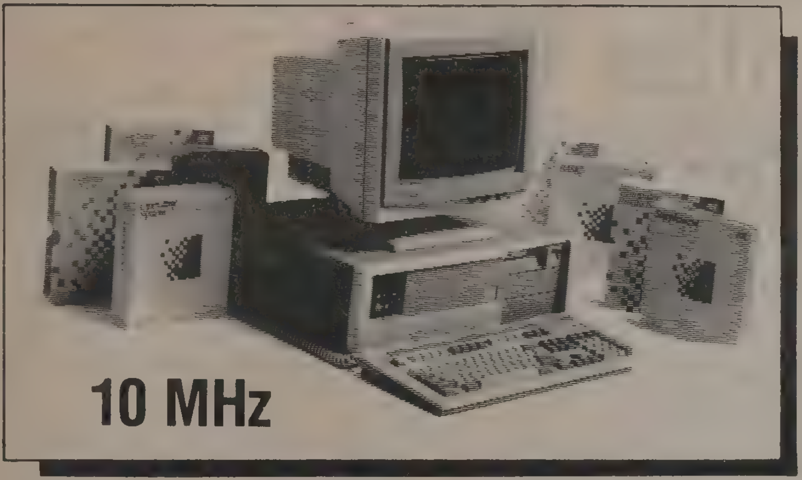
A wide variety of editing effects are available. Any section of a graphic can be selected and cropped, skewed, stretched, adjusted for per-

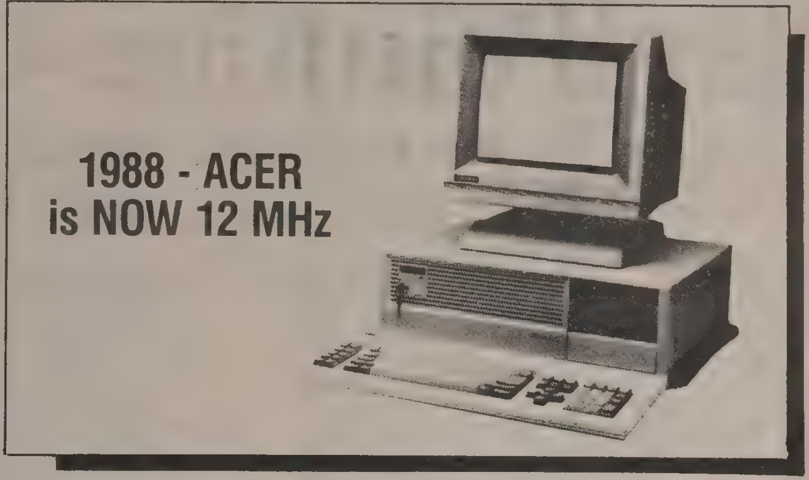
continued on page 109

Now at House of Computers...

"Best of 1987"
—PC Magazine
January 1987

"ACER 900 10 MHz. . . Editor's Choice"
—PC Magazine
April 1987





AST Premium
COMPUTER PRODUCTS

AST Model 80
AST Model 140
AST Model 90

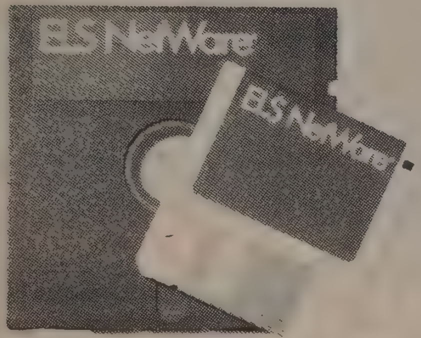
COMPLETE SYSTEMS START AT $1995

Acer

ACER 1100
(386, 40MB, 16MHz, 1 MB)
ACER 900
(286, 40MB, 10MHz, 640K, mono mon)
ACER 710
(8088-2, 40MB, 4.77 & 10 MHz, 640K)

COMPLETE SYSTEMS START AT $1395

TRW On-site Service



$595

ELS NetWare
Entry Level Solution
Networking Software
supports up to 4
stations

COMPAQ

386/20 MHz (60, 130, 300 MB)
In Stock . . . . **$CALL**
Portable 386 (40, 100 MB)
In Stock . . . . **$CALL**
Portable III (20, 40 MB)
In Stock . . . . **$CALL**

TOSHIBA

1000	**$875**
1200	**$CALL**
3100/20 MB	**$3099**

3200 and 5100 Here Soon!

Yes, we carry IBM PS/2!

We Do Upgrades!
We Service All Makes and Models!!

NETWORKING PCs IS ECONOMICAL — CONSIDER IT!

Ideal for small office environments including:
Dental & law offices (Large multi-user systems available.)
Let your PCs share information and expensive peripherals!

As low as **$595**

NOVELL
NetWare

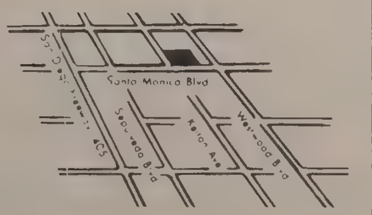
FREE EVALUATION

MAKE YOUR APPOINTMENT NOW!

HOUSE OF COMPUTERS
10929 SANTA MONICA BOULEVARD • LOS ANGELES • CALIFORNIA 90025

(213) 479-7745

Hours: M-Th 9-7
Fri 9-6 Sat Noon - 5pm



PC SYSTEMS

Studio Graphics Meet The White-Collar Office

If you're in business, now is the time to learn something about professional-level computer graphics – before you feel forced to make an informed investment.

By Ken Milburn

For the most part, the quality of graphics generated on PCs is pretty crummy, if you compare them to older methods of producing artwork for business. Yet, every day, we see computer-generated illustrations that are so good that we're not even aware that they were "made-by-computer." They appear in special effects in films, in corporate annual reports, on TV as titles and weather report backdrops, and in "real-world" simulators like the Link flight trainer.

There are several good reasons why PC graphics are generally primitive by comparison: 1) It's taken us time to learn how to accomplish more fundamental business tasks on a computer. 'Til we've managed that, there's not much "perceived need" for fancy graphics. 2) The electro-mechanics of designing and producing the hardware required to display and print graphics of photographic resolution, tonal-range and color are complex and expensive. So such hardware is priced out of the reach of most small businesses and corporate departments (except, of course, those whose full-time occupation is the production of graphics). 3) Software that can take full advantage of such complex hardware is equally complex and expensive.

These are all reasons why some "gurus" claim that businessmen will never buy into pro-level graphics. In my opinion, there are counter-forces at work that will make unlimited graphics capabilities not only desirable, but necessary. First, both the hardware and software will become cost-justifiable as the market broadens. Second, the capability to do desktop publishing and presentations is quickly being adopted by the majority of personal computer users. The reason is that visually effective communications give their participants a competitive edge. Computerized graphics have the potential for making a small business' communications as impressive as those of large corporations with unlimited resources.

The final arguments against widespread adoption of photo-quality graphics are: 1) that those who would use them aren't trained as artists — in other words, they don't know how to communicate visually, and 2) that they can't afford the equipment needed to produce publication or photographic-quality hard-copy.

Those problems are already being overcome. In the same way that there are templates for spreadsheets and style-sheets for publications, there will be clip-art libraries for every purpose. And in the same way that you can take your *PageMaker* files to a service bureau when you need Linotronic output, you will be able to take your graphics files to a service bureau for halftoning, color separations or output to a phototypesetter or film recorder.

In fact, integrated text and graphics programs such as Aldus *PageMaker* and Xerox *Ventura Publisher* are the starting point for this odyssey into the high end. Furthermore, the graphical user-environments (like Macintosh Finder, GEM and *Windows*) are making us all more familiar with the intuitive way that art programs are used. When producing and publishing a graphic reaches the same level of elegance and ease of use as text, both will be used to communicate ideas. Certainly, there is a growing expectation in the business world that you'd better have pictures with your copy, and those pictures had better reflect a high level of professionalism.

The reason is that high quality graphics make a difference in keeping that competitive edge. And the price for owning and renting systems that can generate such graphic images is dropping precipitously.

Dedicated systems that used to cost over $200,000 can now be had for under $50,000. Many high-end paint programs (e.g. *Lumena, TIPS, RIO, Crystal, Dubner*) can run off an AT-compatible. Color printers and film recorders with presentation quality output can be purchased for as little as $6,000.

The Mac II is also stimulating the development of a comparable high-end paint and animation packages — though these systems, fully configured with a high-res color monitor and output device, will still cost over $20,000.

Two dimensional paint programs such as Lumena (TimeArts), *TIPS* (TrueVision), or the ArtStar 2-D system offer the user a selection of literally millions of colors that can be blended, shaded, spray painted, drawn, scrolled, and patterned to precisely represent an imagined or real-life object. You can zoom in to edit pixels, create perspectives, and usually import images from photographs or other software packages.

Other programs and systems dedicated to complex three-dimensional modeling and animation sequences include TOPAS/Crystal 3-D, Cubicomp PictureMaker, and Intelligent Light. With three-dimensional modeling you can show your clients a picture of a new product, before it's been designed. Or you could infuse drama into a sales presentation by stripping the product from surface to interior, detail by detail, in an animated sequence.

Prices Are Falling

Actually, the march to affordability has already begun. Some of the best systems are built on custom-configured AT-class PCs. What's added are specialized graphics boards ($1K – $4K) and super-high-resolution (1 – 2,000 pixels) large-screen color monitors ($1,500 – $4,000).

Unfortunately, the development of high resolution color peripherals seems to be lagging behind hardware and software in the high end market. However, a new breed of high resolution peripherals for making computer-generated four color separation, hardcopy, slides, and video is just now emerging in the form of thermal color printers, film-recorders and broadcast-quality video recording devices. In the last year or so, prices for these have dropped from an average of $15,000 to around $7,000 ,and are still falling.

Dedicated systems for broadcast quality animation and long 3-D animation sequences are considerably more expensive — from $20,000 – $300,000.

Dedicated graphics workstations are being introduced at a furious rate, some at prices no higher than an AT or Mac II configured as described above. All the "big names" in workstations (Sun, Apollo, DEC, Silicon Graphics, NeXT) are in this race for the low end. Each new machine promises to reach new heights of graphics manipulation — video, full color animation, paint systems that rival the best artist's palette, and new ways of displaying 3-D images — the array of fast and faster drawing features is mind-boggling.

No sooner is a workstation introduced than it's preempted by competing machine. And new versions of graphics software arrive at an even faster clip.

Freelance graphics professionals, many of whom are very small businesses by *Fortune* standards, can afford to start working more efficiently by adopting computers. These include architects, designers, engineering firms, broadcasters, ad agencies and marketing departments.

More significantly, more traditional "white-collar" businesses can now afford to bring high-end graphics in-house, and can reduce their dependence on outside talent and facilities.

But this breakneck pace of new products that creates new generations in months rather than years means massive chaos when it comes to business buying decisions. Do you buy today, or wait for the next more powerful, less expensive generation that might come along next week?

The high cost of purchasing and maintaining up-to-date equipment prohibits most businesses from buying a high-end system outright. And all of these systems are difficult to learn — requiring some art training and a minimum of 30 hours of

---

Copyright © 1988 by Ken Milburn. All rights reserved. *Ken Milburn is a freelance writer on Microcomputers. His articles have appeared in numerous computer publications, including* PCWorld, InfoWorld, Computer Graphics World *and* MicroTimes. *He also does system configuration for small businesses. He can be reached at (415) 331-6926 or by sending E-mail to (ken) on the WELL, (415) 332-6106.*

AST

Complete EGA Package
40 MB Seagate drive
NEC Multisync II
AST 3G card
1.2 drive parallel & serial
DOS/documentation
6/8/10 MHz/0 wait

$2899

AST

Complete mono package
w/20 meg HD **$1979**
w/40 meg HD **$2199**
Mono Monitor
6/8/10 MHz
0 wait state
1.2 drive
Parallel & serial
Mono monitor/keyboard
DOS/documentation

AST

Premium/286 Model 80
suggested retail price
$1995
our price only

$1649

AST

Model 40 **$2639**
Model 70 **$2899**

1 MB fast RAM
1.2 drive/3G card
40/70 factory installed
Hard disks DOS/documentation
6/8/10 MHz

Lifetime Warranty
5.25" DS/DD Diskettes

Premium Diskettes

25¢ each

For the following extras add:
2¢ paper sleeves
4¢ tyvek sleeves
2¢ labels & tabs
Packaged in white box $3.30 per box
All diskette prices are minimum 100 disks

30 Day Money Back Guarantee

3.5" DS 99¢

High Density (AT) Diskettes

5.25" DS/HD
Diskettes
Lifetime
Warranty

65¢ each

All prices reflect cash and carry, and are subject to availability and price increase.

Seagate

ST 251-1
28 ms
Half height
$499

Seagate

ST 238 30 MB
w/controller
65 ms
Cables & manual
$289

Seagate

ST 225 20 MB
w/controller
65 ms
Cables & manual
$269

Seagate

ST 251 40M
full height, 38 ms
38 ms
$399

Products Carried in our Santa Monica Store:

Hardware
AST computers
HP Laserjet II
Toshiba laptops

Accessories
Data Cartridge
Diskettes
Disk storage cases
Disk cleaning kit
Diskette mailers
Workstation
CPU stand
Monitor stand
Keyboard drawers
Ribbons
Paper
CRT valet
Mobile workstation
Printer stand
Surge protector
Software template
Educational video
HP toner cartridge
PC tool kit
Dust covers
Cables

Desktop Publishing
Gem
Ventura
Ashton Tate

TOSHIBA

T3100/20
640 KB of RAM
20 MB hard disk
80286 microprocessor
Carrying case
Gas plasma screen
15 pounds
DOS 3.2
3.5" drive
$3039

TOSHIBA

T1000
512K RAM 720K drive
Weighs 6.4 pounds
Runs 5 hours on batteries
Runs on AC, too
Super twist LED screen
Suggested retail
$1195
our low price
$749

TOSHIBA

T1100 Plus
640K dual 3.5 floppy
Battery & AC adaptor
Super twist screen
$1599

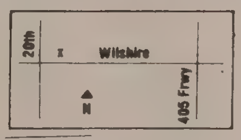
HEWLETT PACKARD

Laser Series II
our price
$1599

TOSHIBA

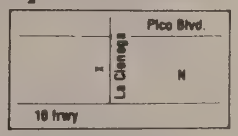
T1200
20 MB hard disk
720 KB 3.5 floppy
1 MB RAM
MS DOS
Super twist LCD
$2339

Data Bureau, Inc.
1919 Wilshire Blvd.
Santa Monica, CA 90403
Tel. (213) 828-7752



Open Mon-Sat
9am to 9pm

Data Bureau, Inc.
Diskettes Division
Mail order—Retail—Wholesale
1731 S. La Cienega Blvd.
Los Angeles, CA 90035
Tel (213) 836-3148



Open Mon-Friday
9am-5pm Sat 10-4
Diskettes only

instruction and practice.

What it all adds up to is that if you're in business, now is the time to learn something about professional-level computer graphics — *before* you feel forced to make an informed investment. The best way to learn is, of course, to get some hands-on experience.

Where To Get Hands-On Training

Fortunately for the business community, there are at least two schools — both located in Northern California — that have undertaken the much-needed task of training users and businesses on sophisticated computer graphics systems. Both of these schools concentrate on vocational training for graphics professionals, but they also teach overview courses on industry developments that would give any MIS Director or business owner a clear idea of which of these complex systems best suit particular tasks, what sort of training is required to operate them and what the *real* costs of training and installing such a system would be.

Tucked away in San Francisco's SOMA design community are Suite 3D and The Computer Arts Institute. The two schools were founded by Harold Hedelman and Rodney Stock, respectively. In fact, the two men were once partners. But the philosophical rift that broke up the partnership is the San Francisco community's gain. Both schools are committed to the concept of vocational training — that is, the notion that well-taught, hands-on computer graphics trainings breeds good, employable operators. Classes can be taken singly or as part of a core program.

There is great emphasis on working with and servicing the business community. Graphic artists can rent time on machines in either facility and both offer considerable service bureau options. Both also offer custom on-site training seminars for businesses and dealerships.

Suite 3D, for example, recently ran a series of courses on newspaper illustration, taught at The San Francisco *Chronicle* by one of the paper's top designers. The school has also been developing courses for the fashion design.

The Computer Arts Institute is specializing in providing training for a number of very high-end systems for engineering and broadcasting — including the Dubner TurboPaint, the Intelligent Light, and ArtStar systems. The Institute also provides custom training to businesses on systems and has organized "Buyer's Assistance Seminars" to help businesses evaluate graphics systems in a non-sales environment.

We interviewed Rodney Stock, President of Computer Arts Institute and that interview appears in an accompanying sidebar. ☐

Copyright © 1988 by Ken Milburn. All rights reserved.

The Computer Arts Institute: Professional Graphics Training

The Computer Arts Institute is particularly proud of its inventory of over $600,000 in high-end graphics equipment. To attain this massive offering, the school maintains solid liaisons with many of the country's leading-edge graphics manufacturers.

Many of the these ties begin with the Institute's founder and President, Rodney Stock — a graphics guru in his own right, who brings 21 years of experience to his task as educator. He is a well known speaker, writer, consultant, and computer-graphics designer with several patents to his name. To learn more about how The Computer Arts Institute meets the business community's needs for high end graphics training and service, we interviewed Rodney Stock, president and founder of CAI at its Townsend Street location.

How did you become involved with computer graphics?

Well, I dropped out of Northeastern in my freshman year to work as a junior technician at Adage, where they were designing the first 3-D vector system. I worked for a number of companies that resulted in lots of promotions. In 1971, AMPEX hired me to be hardware designer for the AVA - 1&2 paint system. After that, I worked for Evans and Sutherland, who were doing absolutely brilliant real-time graphics simulation. My last job was Lead System Designer on the Pixar Project for Lucas Film.

How does a college dropout become interested in education?

I'm not against education per se. In fact, I was Chairman of the SIGGRAPH Tutorial on State of the Art and Image Synthesis for three years as well as a Broadcast Designers Association speaker. But I do feel that a college education doesn't necessarily train one for a career in computer graphics. The trouble with the graphics industry is that the people who have the technical expertise don't communicate well, and the communicators don't have the expertise. To operate or train others on a high-end system, you need hands-on experience. I call this vocational training and that's what we offer at CAI.

$600,000 sounds like a lot of equipment to me. How did you manage to amass this collection?

It is. I buy, lease, receive donations, borrow, or trade consulting. I've dedicated my life to being at the leading edge of computer graphics. I owe my allegiance to the industry and I've got a deep commitment to seeing the industry grow. I'm friends with most of the manufacturers and they are well aware of what I'm trying to do at CAI.

On what systems do you provide training?

For 3-D, we have two Cubicomps, a Digital Arts, Crystal 3D, 3 Topaz systems, ArtStar 3D Plus, and a new Intelligent Light system. For 2-D we have TIPS, RIO 16/32, ArtStar, a Dubner TurboPaint, and an AVA 3 system. Finally, for desktop publishing, we have a Mac Plus, a MAC SE, multiple Mac IIs and in my opinion, the best *Illustrator* (Adobe) training in the city. We also have some very high quality peripherals including a Matrix film recorder and a Howtek color scanner.

What is the range of jobs for which CAI trains students?

They might become demonstration operators, technical support representatives, Trainers for manufacturers and dealers, presentation artists, desktop publishing artists....Some of our students have gone on to start their own businesses.

What kind of salaries can these folks expect?

Depending on the level of responsibility they're undertaking, probably between $20,000 and $55,000.

Can you tell me what some of your graduates have gone on to do?

Sure. Ron Kelley comes to mind. He was a produce manager at Safeway for fifteen years, but before that he'd received a degree in art. He had the opportunity to change careers and took our full Foundation course in 2-D and 3-D animation — that runs eight months at a cost of approximately $6,000. Ron got a part-time job at Penrose Productions — a production house in Menlo Park. After a few weeks, he was offered a full-time job. It's his dream.

Have you been able to "thank" some of the manufacturers who gave you equipment with a trained operator?

Absolutely. Michael Willis was a designer who took our series of Cubicomp courses. After graduating, we placed him at Cubicomp as a demonstration artist. Later, he was promoted to one of two in-house animators. Another fellow used to drive up from Palo Alto on his motorcycle — he's now working for Cubicomp in Milan, Italy. Of course, there are many students who don't check back once they've graduated.

Beyond training operators, what services do you offer business?

Essentially, we give business the opportunity to train on a $300,000 system for over 30 hours at a cost of under $300. We also offer a number of "hands-off" informational overviews for the executive who has a need to learn about what's out there in computer graphics. Our "Buyer's Assistance Seminars" that help businesses to evaluate different systems, are very popular. I've noticed that a number of manufacturers are beginning to sponsor similar seminars.

We also offer custom training on machines for dealers and salesmen, particularly for those systems that don't provide enough technical support. These run from two to four days with a maximum of four participants.

How about a service bureau?

Good point. We can offer specialized services because of our huge equipment inventory. We charge less than full production houses — but we can't offer the same level of responsiveness. We definitely take longer.

Who might use your equipment or services?

We have one customer who is an environmental designer. Using the Howtek scanner he's able to scan photographs of the site he's designing. Then he adds details of how he's planning to change the site with a paint program. Finally, he takes a slide of the new image. He informs us that he's won several contracts through this method of showing the client exactly what he's going to see in the finished project.

What trends can a user expect in the next three years?

I think that there will be a proliferation of Mac IIs. We'll see the technology advance faster than the applications, making buying decisions as precipitous as ever. Desktop Publishing will grow as pre-press printing becomes cheap. Color print and four-color separation will explode and we'll be able to enhance and modify photographs with an increasing degree of ease. The good news is that prices will keep dropping.

— *Ken Milburn and Priscilla Rowe*

ATLANTIC COMPUTER SYSTEMS

HIGH PERFORMANCE computers at AFFORDABLE PRICES!

NEW!

Complete 80386 System

$2795.00

- Micronics 80386-16, 0 wait mother board (designed/manufactured in U.S.)
- 1 Mb high-speed static-column RAM installed
- Expandable to 10 Mb
- Phoenix or Award 386 BIOS
- Relocatable BIOS & EGA BIOS for improved performance
- 1.2 Mb/1.44 Mb floppy disk drive
- High speed 16 bit hard/floppy controller
- 250 Watt, U.L. - listed power supply
- Hercules-comp. monographics card with printer port
- Thomson 15", dual-freq (CGA/MGA) amber monitor
- AT deluxe case (space for 5 half -ht. drives, RESET/TURBO buttons, RESET/HDD/TURBO LEDS)
- KEY TRONICS enhanced-101 mechanical-tactile keyboard
- 60Mb RLL EncodedHard Disk Drive

OPTIONS:

* 20/16 system upgrade	add $300.00
* Color upgrade (640 x 200)	add $185.00
* EGA upgrade (640 x 350)	add $395.00
* Multisync upgrade (800 x 560)	add $625.00
* Tower case	add $220.00
* 108 Mb RLL Hard Disk Drive	add $ 700.00
* 80387 adapter	add $ 90.00

Complete 80286 40 MB System

$1215.00

- 10/6 MHz (80286-10 CPU)
- 512 Kb RAM on board (exp. to 1 Mb)
- 1.2 Mb Floppy Disk Drive
- Hard/Floppy Disk Controller (WA2)
- Monochrome Graphics Card
- 15" Hi-Res. Monochrome Monitor
- Printer Port
- On-Board Clock/Calendar
- AT Slide-In Case (TURBO/RESET buttons, 3 LEDs)
- 200 Watt Seasonic Power Supply
- Qtronics enhanced-101 mechanical-tactile keyboard
- Factory Tested/2-Day Burn-In

OPTIONS:

* Color option (640 x 200)	add $185.00
* EGA option (640 x 350)	add $395.00
* 1Mb RAM upgrade	add $150.00
* 10 MHZ 0 wait RAM upgrade	add $ 70.00
* 12 MHZ CPU upgrade	add $ 90.00
* AT I/O (serial/par/game)	add $ 45.00

Complete 8088 30 MB System

$855.00

- 10/4.77 MHz (Intel 8088-1 CPU)
- 512 Kb RAM on board
- 30 MbHard Disk Drive
- Hard Disk Controller
- Monochrome Graphics Card
- Printer Port
- Hi-Res. Monochrome Monitor
- AT-Style Slide-In Case
- 150 Watt Power Supply
- Qtronics 84-key mechanical-tacile keyboard
- Factory Tested/2-Day Burn-In

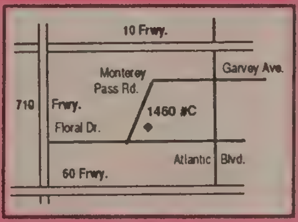
OPTIONS:

*Color option (64 0x 200)	add $185.00
* EGA option (640 x 350)	add $395.00
* 640 Kb RAM upgrade	add $ 40.00
* 3 1/2" 720 Kb FDD	add $ 85.00
* 3 1/2" 1.44 Mb FDD	add $ 115.00
* Enhanced-101 Tactile keyboard upgrade	add $ 20.00
* Disk I/O	add $ 35.00

HARD DISKS

Fuji 20 MB w/ controller 65 ms	**$295**	Seagate ST-251 MB 40 ms	**$395**
Fuji 30 MB w/ controller 65 ms	**$325**	Seagate ST-251-1 40 MB 28 ms	**$450**
Miniscribe 3650 40 MB 52 ms	**$345**	Seagate ST-4051 40 MB 38 ms	**$415**
Miniscribe 6053 40 MB 28 ms	**$585**	Seagate ST-4053 40 MB 28 ms	**$595**
Miniscribe 6085 72 MB 28 ms	**$795**	Seagate St-4096 80 MB 28 ms	**$825**
Toshiba MK-56 72 MB 25 ms	**$850**	CDC 94205-51 40 MB 26 ms	**$425**

Digitech Research dba
ATLANTIC COMPUTER SYSTEMS
1460 Monterey Pass Rd., #C
Monterey Park, CA 91754
TEL: (213) 267-1638
FAX: (213) 267-1583



TERMS: prices/availability subject to change without notice. All systems carry a 1 Year Labor/6 Months Parts Limited Warranty. All returned merchandise sujbect to 20% restocking fee. AT/ XT are registered trademarks of International Business Machines. Hayes is a registered trademark of Hayes Computer Technology.

The Guru And The Tramp

In Which Baba Charstar Learns The Secrets Of The UNIX Standard

By Bennett Falk

After a hard day of beating on a drum and chanting, Baba Mahamaya "Curly" Charstar slipped into a fast food store, bought a six-pack, and settled down on a park bench to watch the sunset and relax.

An unshaven man with an ill-fitting hat, worn-out shoes and rumpled clothes sat down on the bench beside him.

"Yo, bub," the tramp ventured, "you got a yen to part with one o' them brewskies?"

"Not 'specially."

"I could make it worth your while."

"Oh? How?"

"Well, tell me, you know anything about computers?"

"Yep. As a matter of fact, I do. I am widely regarded as a UNIX guru."

"Gooroo? What's that? Some kinda hifalutin' hacker?" The tramp laughed and quickly fell victim to a coughing fit.

"Well anyways, I'll bet that being a gooroo and a buck fifty'll get you a cup o' yuppie coffee in Berkeley just about any day. Look here, 'f you're so smart whyn't you got a job?"

"You don't understand. Being a guru, I have transcended the need for employment. And anyway, what could you possibly tell me about computers?"

"Oh, hey, I get around. I read a lot, too: y'know, I sleep under some o' the country's most influential newspapers.

"Now, lemme see, UNIX, that'd be a multi-user operating system from AT&T, sort of a computer traffic cop, as I understan' it. It's a good thing you met me, 'cause if you got anything to do with UNIX, you could be lookin' at hard times ahead."

"How so?"

"Well now, that'll cost you a beer, don't you know, but I'd say that's a real small price to pay."

"Oh, all right." Baba Charstar popped the top and handed the can over. The tramp took a long swig, looked up at the sky contemplatively, and belched.

"Now. Listen up, 'cause I'm only gonna say this stuff once. AT&T owns UNIX, am I right?"

"Right."

"And they owned it from the git-go, before they ever thought about making their own computers. It started out as some kind o' research tool, a little something the guys in the lab worked up to make the daily grind a little easier. And the idea was to have something that would run on any computer that came their way, mostly DEC stuff back then, but just about anything would do.

> **"Now, AT&T wanted to work out some kind of arrangement about Berkeley UNIX, and they decided to kill two birds with one stone, so to speak, and made their deal with Sun Microsystems. Now the great thing about this is that Sun Microsystems is not only a big Berkeley UNIX booster, but also a real hot property in the technical workstation market."**

"Well, time passed and AT&T started making computers and in 1983 they looked around and saw a lotta different versions of their own stuff *and* Berkeley UNIX *and* Xenix, and they decided it was time to get a lot more serious about UNIX. So they came up with UNIX System Vee."

"That's five."

"Huh?"

"It's System *Five*, the 'V' is a Roman numeral for five."

"Vee, five, whatever. Anyway, they insisted that System *Five* was gonna be it, the standard for UNIX from here on out. And on top o' that AT&T's UNIX development was gonna be done on their '3B' machines and then get ported to other computers. This was a touchy subject for a while, but eventually things worked out. 'Course, there was still the BSD kind of UNIX from that university in Berkeley, and Microsoft had Xenix, but things were settling down.

"AT&T's computers been selling okay, but they haven't exactly been burning down the house, if you know what I mean. And in the meantime, powerful computers been getting cheaper and cheap computers been getting more powerful and bingo, there's a whole new market out there for the 'technical workstation', something no bigger'n a desktop, but about as powerful as mini-computer, whatever *that* is, and costing, say, between $3,000 and $30,000. This is a *big* market, you see.

"Now, a lotta folks figure that UNIX is just the thing for technical workstations, so AT&T figures to make a lot of money here, even if they don't sell the hardware.

"But just to kinda consolidate things a little better, AT&T's been wheeling and dealing with the other folks that got UNIX products on the market. With Xenix, that was a piece of cake: they hammered out a deal with Microsoft back in early '87 to work toward binary compatibility between Xenix and System V. You know anything about 'binary compatibility'?"

"Yeah, sure," Baba Curly answered, "it means that programs compiled under Xenix will run under UNIX System V, and vice versa. Of course, it's assumed that the Xenix and the System V are running on the same kind of processor."

"I couldn't have put it better myself. Y'know, you're smarter'n you look. So anyway, since Xenix was basically a product for processors made by Intel, that agreement could more or less nail down a standard for UNIX on the Intel family of chips, and that's a pretty big deal.

"Now, to put some meat on the bones of this agreement, Microsoft pulled in the Santa Cruz Operation and AT&T brought in Interactive Systems, 'cause those companies had worked on the two products that are being merged. So, even as we speak, the four of 'em are working on a Binary Compatibility Standard, which I would just as soon call a 'BCS,' okay with you?

"Fine by me."

"Good. Now trying to come to some kinda agreement with the Berkeley UNIX crowd was a little touchier. I mean, a university's not exactly like a company, but there are some companies that have been trying to promote Berkeley UNIX in the marketplace. Some of 'em are software companies, like Mt. Xinu, that's Unix Tm backwards, y'know."

"I know, I know."

"Good, I didn't want you to miss nothing. Uh-oh, this beer's empty, mind if I have another one?"

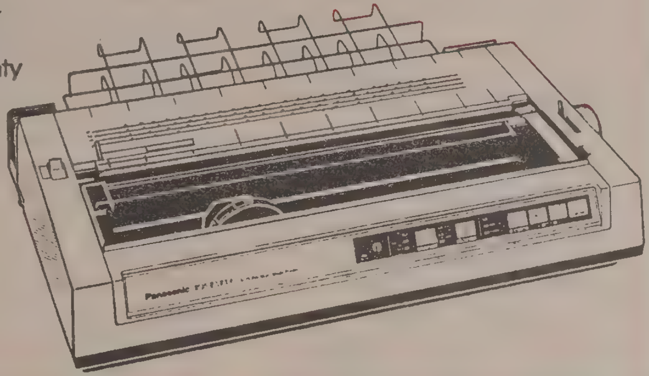
Copyright © 1988 by Bennett Falk. Bennett Falk lives in the Bay Area and works for Sybase, Inc. He writes whenever he can and hopes for the best.

Dot Matrix Speed and Daisy Wheel Quality . . .

. . .From the Panasonic KX-P1524 24-pin dot matrix printer. Just watch how fast it'll print your letters. And your memos, drafts and reports. All with the quality you can only get from a 24-pin printhead. The Panasonic KX-P1524. For print that's fast. And looks fantastic.

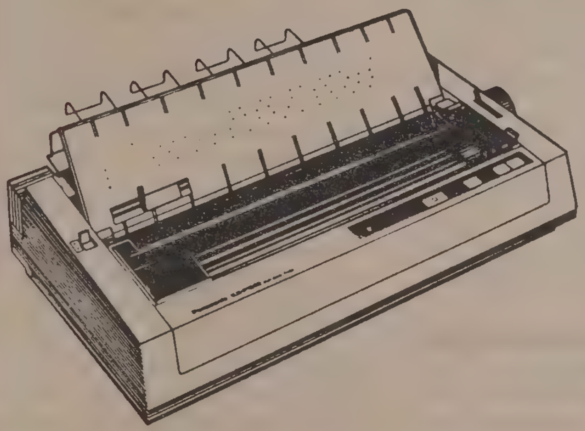
- Up to 240 cps draft, 80 cps LQ speed
- Memo load for quick single sheet paper load without removing tractor feed
- EZ Set Front Panel for user convenience
- Built-in friction/push tractor feed
- Compatible with most popular software
- Font card slot for optional letter quality fonts
- High performance at an excellent value
- Wide 15" carriage for increased versatility
- 2-year limited warranty

$549.00



Panasonic®
Office Automation OA

Multi-mode printing from a wide-body Panasonic



Print on paper up to 16.5" wide with the Panasonic KX-P1595. It gives you the print style versatility of sophisticated dot matrix technology. Plus the convenience of a wide carriage. So you can print large charts, graphics and spreadsheets without a problem. The Panasonic KX-P1595 – a wide-body that's got style.

- Prints 240 cps in draft mode
- Near letter quality printing
- Handles paper up to 16.5" wide
- Operator-accessible font switch
- Bi-directional and logic seeking print head
- Nine pitches
- Graphics capabilities
- Built-in friction/push-tractor feed
- Built-in parallel and RS-232-C serial ports
- 2-year limited warranty

Panasonic®
Office Automation OA

$459.00

---

*Dealer Inquires Welcome

Available at:
Digitech Research dba
ATLANTIC COMPUTER SYSTEMS
1460 Monterey Pass Rd., #C
Monterey Park, CA 91754
TEL: (213) 267-1638
FAX: (213) 267-1583

Business Hours
Monday - Friday
9:30 - 6:30 PST

“Oh, what the heck, why not?”

“Thanks. Now, AT&T wanted to work out some kind of arrangement about Berkeley UNIX, and they decided to kill two birds with one stone, so to speak, and made their deal with Sun Microsystems. Now the great thing about this is that Sun Microsystems is not only a big Berkeley UNIX booster, but also a real hot property in the technical workstation market. So AT&T cosies up to Sun. You following this all right?”

“Yeah, sure.”

“Well, it’s about to get complicated, so let me know if I’m going too fast for you, okay?”

“Right.”

“So AT&T has made a deal with Sun. Back in October of ’87, in fact on October 19, the day stock market fell all apart, they announced two things: first, that some future AT&T computer would use a new architecture from Sun called “SPARC,” *and* second, that AT&T and Sun would collaborate on an ABI for SPARC.

“‘What’s an ABI?’, you say, and I says, it’s nothing but a BCS for these new SPARC processors. AT&T’s betting that there will be enough of ’em to deserve a standard, and they’d prefer to get that standard down on paper before there’s incompatible products all over the place.

“The way Sun and AT&T worked it out, the first step toward this ABI is for Sun to produce a version of its operating system that conforms to the System V Interface Definition, the es, VEE, eye, dee. You know about this stuff?”

“Of course,” replied Baba, “The SVID describes all the inputs expected by the UNIX kernel as well as all the kernel’s outputs. It’s a weird document: it doesn’t explain *how* the kernel does anything, just what goes into it and what comes out of it.”

“Well, you’re not a half bad talker, are you?” the tramp replied. “You got any poop on SPARC?”

“Sure,” the flattered guru warmed to the topic. “SPARC is a kind of tortured acronym for Scalable Processor ARChitecture. I don’t know all the details about it, but it’s a Reduced Instruction Set Computer, RISC for short, design.

“The idea behind RISC is that processors don’t need to have a lot of specialized instructions. With a Complex Instruction Set Computer (CISC), you might get a processor with instructions to do a lot of fancy things, but you’d pay a performance penalty.

“The RISC design assumes that you can get everything done by building more complicated functions out of a few (say, less that a hundred) ‘primitive’ instructions and a lot of fast memory (or registers) right on the chip. If the number of instructions is small enough and they have a more or less uniform format, it becomes possible to ‘hardwire’ them into to chip for *really* fast execution.

“The RISC people are always talking about ‘mips,’ millions of instructions per second. Of course, RISC machines have to perform more instructions, say 30% or so more, than CISC machines to get the same work done, but these instructions should execute at about five times the CISC machine speed, so in theory, RISC machines have a big advantage.”

The tramp grinned at him and slipped another beer out of the bag. “That’s good, real good. But, you got to understand that the real issue here isn’t this RISC stuff, or Sun’s proprietary architecture or even the agreement between Sun and AT&T to work out some kinda amalgamation of System V and Berkeley UNIX. Oh, sure, the October ’87 agreement was a big deal, but the two companies have been working since 1985 on making their versions of UNIX compatible.

“Nope, none of that would amount to a hill of beans if it weren’t for the announcement in January that AT&T would buy about a 20% interest in Sun. That 20% interest is gonna cost AT&T about $300 million but for that, they get a seat on the Sun Board of Directors.

“Anyway, this deal gets announced, and whoa, Nellie! I mean, all of a sudden we got meetings and consortiums coming outa the woodwork.

“Motorola hits the deck with a plan to put together a BCS for UNIX on Motorola’s 68000 family o’ processors. I mean, it’s gotta be a little insulting to them that there’s all this talk about a BCS for an architecture that ain’t even a force in the industry yet. So they get together with Unisoft (which has done a major share o’ the work porting UNIX to 68000-based machines) and some other companies and launch a program to come up with compatibility standards for UNIX software on Motorola processors.

“Now this makes a lotta sense, and the interesting thing is that the group working on the Motorola BCS doesn’t include AT&T, who owns UNIX and who took the initiative in the other two BCS efforts.

“O’ course, AT&T never was a big seller of Motorola based computers. And I guess you could say that a binary compatibility standard basically shows how a family of processors is gonna relate to the SVID, and that the BCS doesn’t *have* to affect UNIX itself.

“But personally, I think that AT&T and Motorola are gonna have to settle their hash someday soon, ’specially since the Motorola BCS is supposed to cover the whole 68000 chip family which will eventually include a RISC chip.

“If AT&T and Motorola wanted to get real silly, they could each claim their binary control standards were for RISC processors in general, but it don’t make sense to enforce a BCS on something that’s not a chip, and it especially don’t make since to have a BCS for a theory of how a computer ought to work.

“And Sun’s got to be careful, too. They’re gonna have to live with whatever Motorola comes up with ’cause that’s the chip family they’ve been using so far. Even if Sun stopped selling Motorola-based computers right now (which they won’t), they’ve still got an installed base to support.

“So that’s one part of what’s happening. You know what the other part is, sonny?”

“Haven’t the foggiest,” the guru replied, rummaging through the bag and wondering why there were no beers left.

“The other part is that a whole bunch o’ companies got worried that UNIX, which started out as hardware independent, is being tied to the SPARC architecture. They think that there’s something else behind all the talk about an ABI for SPARC and a hybrid System V/Berkeley UNIX product, that is, AT&T’s gonna tailor UNIX to Sun’s new architecture, so SPARC machines will perform better than other UNIX machines, and Sun’s gonna have the inside track on the way UNIX develops.

“Just why these worried folks didn’t come unglued back in October, I really couldn’t tell you, but man, oh man, the day after that equity purchase agreement was announced in January, the concerned parties got themselves together pronto.

“First, a telegram was sent to the the President of AT&T’s Data Systems Group, Vittorio Cassoni, who happens to be the man who’s gonna get to check out the view from the Sun board room. The telegram basically said all the signees were worried about the future of UNIX as an ‘open standard’ and asked Cassoni to meet with them. The companies represented in that telegram were Apollo, Data General, DEC, Gould, Hewlett-Packard, Intergraph, Integrated Solutions, MIPS, Motorola, NCR, Prime, Silicon Graphics, Tandem, Unisoft, and Wyse.

“The San Jose reporter that broke the story called ’em the Hamilton Group ’cause they met at DEC’s place down on Hamilton Ave. in Palo Alto, but there’s some that calls ’em the ‘Gang of Sixteen.’ I’d just as soon call ’em the ‘licensees’: they’re all AT&T’s customers and trying to get the most they can outa their UNIX licenses.

“Well, they got their meeting with Cassoni on January 28, and it was a beaut. The licensees insisted that an ‘open software standard’ ought to provide equal opportunity for all interested parties to participate, unbiased resolution of conflicts, equal and timely access to new versions, equal rights in marketing and disclosure, public definition of the standard, and of course, hardware independence.

“That’s quite a mouthful by itself, but the licensees were ready to confront Cassoni with just how AT&T UNIX strategy had deviated from this ideal.

“When Cassoni had his turn, he talked about ‘openness,’ too, but where the licensees were focused on openness in corporate relations, Cassoni emphasized the openness of technology: the need for ‘open architecture’ and for standards for binary compatibility. Let me tell you, I would like to have been a fly on the wall for the Q and A part of that meeting.”

“Now all this was just before UNIFORUM, one of those big whoop-di-doo trade shows for UNIX. You ever been to one o’ them?

“Yeah, I went once a few years ago. I spent the better part of an entire afternoon in the exhibits listening to some bozo in a pith helmet brag about being kicked off of ARPANET.”

“Kid, you got a lot to learn. Y’know, if you play your cards right, you can drink free all week at one o’ them shows. You oughta get yourself a lifestyle consultant.

“Anyway, two things happened at UNIFORUM to kind of round out the controversy. First off, AT&T announced the schedule for System V Release 4.0, which will be the end result of all the wheeling and dealing around Xenix and Berkeley UNIX. It’s gonna be developed on the 3B computer and then ported to the Intel 80386 and SPARC processors, and after that it’ll be ported to ‘other architectures.’ Kinda strange that Motorola didn’t get mentioned in the announcement.

“The second event at UNIFORUM was a pep talk from Jack Scanlon, a vice president for product development in AT&T’s Data Systems Group. He took the stage to do two things: reassure everybody that AT&T wouldn’t abandon open licensing, and warn everybody that a stampede by the licensees to define a standard of their own would screw things up.

“The announcements at UNIFORUM calmed down some of the licensees, at least, and a few days later Motorola finally got a nod from another AT&T VP, John Boyd, who put Motorola right up there with Intel and SPARC as a major standard platform. Hard to say what that means, but better late than never, I always say.

“An’ now the whole kaboodle has gone back into hiding. There’s still a lot of strong feelings on both sides, but I think it’s all sort of one on one now, with AT&T and individual licensees sparring with each other.

“Any questions?”

“Yeah,” the young guru grinned, “who’s right?”

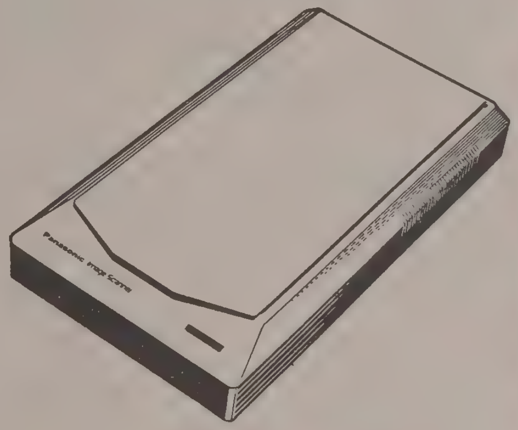
“Beats me. You got any spare change?” ☐

Panasonic®
Office Automation OA

Give Your Computer Scanning Power

*Add high resolution scanning to your personal computer applications. The Panasonic® FX-RS505 Image Scanner lets you input images from virtually any printed source into your computer files. It's as quick and easy to use as a photocopier. Every FX-RS505 includes a plug-in board for your Panasonic Business Partner™ or IBM PC/XT/AT * compatiable computer.*

FX-RS505
Image Scanner



Technical Specifications

Scanner Type:	Flatbed (unmoving document)
Scanning Area:	8.5" x 14" (216 x 356 mm) (Legal, letter, invoice,etc.)
Resolution (selectable by software):	400 x 400 dpi (dots/inch) 300 x 300 dpi (dots/inch) 200 x 200 dpi (dots/inch)
Halftone:	16 gradations (photo 1/photo 2, two different dither patterns)
Scanning Speed:	3 msec./line (Variable as speed of host computers)
Output Mode:	Text mode (bilevel)/Photo mode (dithedbilevel)
Contrast Control:	7 levels (text mode)/3 levels (photo mode)
Image Inversion (B/W):	Possible Normal image (positive)/Reverse image (negative)
Interface:	Special board (13") for Panasonic Business Partner series, IBM PC/XT/AT and compatibles 15 pin D-sub connector for High-speed serial lines for DATA RS-232C lines for COMMAND
Drop Out Color:	Light Green
Sensor:	CCD
Luminous Source:	FL lamp (green)
Shading Correction:	Automatic (by hardware)
Control Panel:	Power LED (green)/Ready LED (green)
Power Supply:	AC 115 V, 60 Hz
Dimensions (W x D x H, approx.):	13 1/2" x 20 5/16" x 5 1/8" (343 x 516 x 130 mm)
Weight (approx.):	17.2 lbs. (7.8 kg)

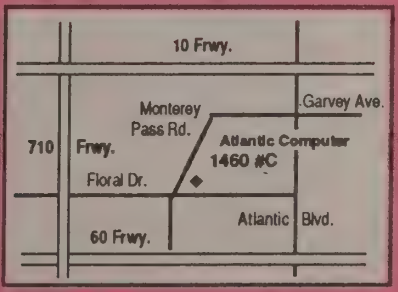
. . . . . **$1049**

FX-BM89
Facsimile Board for IBM PC/XT/AT Personal Computers **$749**

FX-RS505 & FX-BM89 . . . . **$1629**

*Dealer Inquires Welcome

Digitech Research dba
ATLANTIC COMPUTER SYSTEMS
1460 Monterey Pass Rd., #C
Monterey Park, CA 91754
TEL: (213) 267-1638
FAX: (213) 267-1583



TERMS: prices/availability subject to change without notice. All systems carry a 1 Year Labor/6 Months Parts Limited Warranty. All returned merchandise subject to 20% restocking fee.

* IBM PC/AT/XT are registered trademarks of International Business Machines.

TELECOMMUNICATIONS

Pocket Baud

By Brock N. Meeks

You've seen those slick ads in computer magazines — the ones that proclaim the wonders of "state-of-the-art pocket modems." The ads claim that these down-sized modems give you all the telecommunications capability of your regular modem, which, by comparison, is the size of a 1932 Hudson. The ads are peppered with the quick wit of Madison Avenue copywriters and photography that belongs in the pages of *Vogue*.

But do these modems work? Yes, but some better than others. This column looks at three of the better known pocket modems: Migent, Parrot, and Worldport.

Form, Fit, And Function

"The pocket modem. Never leave home without it." (My apologies to American Express.) These pocket modems are indispensable for the traveling telecommunicator. They hardly take up more room than a pack of Marlboros, and can be adapted to fit any computer with an RS-232 port. Laptop users will love these modems, too.

If you have a slot in your laptop, these modems free you from the burden of an internal modem; and for those venerable Tandy Model 100 and 200 users (myself included), these modems free you from the tyranny of this computer's built-in 300-bps modem.

All the modems examined below respond to the Hayes "AT" command set. This assures compatibility with the majority of communications software on the market.

Migent: Points For Style

The best known of these pocket modems is from Migent Inc., and is billed as a "state-of-the-art information machine that looks like one." And in this age of sleek lines and fast figures, the Migent's stylized red plastic case looks to have been designed by a graduate of Pasadena's famed Art Center College of Design.

Although Migent's done its PR homework, its modem turns out to be the largest of the lot. It also has the fewest features.

The Migent performed erratically; this isn't a characteristic you treasure in a modem mainly used "in the field." When used on noisy telephone lines the Migent would summarily drop carrier — sometimes. When I asked Migent's marketing director, John Pocaro, about this he could only offer: "I have reports saying that say the modem is susceptible to noise, and others that say the modem works fine on noisy lines; so it depends on where you test the modem." Comforting, no?

The Migent is also devoid of status lights, those LEDs that flash on and off telling you exactly what's happening with your data transmission. Most external modem users I know swear by these status lights. In an attempt to overcome the lack of these status lights, Migent is now shipping a software program with the modem that puts a graphic representation of the status lights on your monitor — but only if you are working on an IBM or compatible. Model 100/200 users are out of luck; so are Macintosh users.

The modem is powered by a nine-volt battery or AC adapter. (The AC adapter is now shipped with modem; early versions of the modem had the adapter listed as an option.) One nice feature is that the modem sounds an alarm through the computer's speaker when the nine-volt battery is low. This is more of a survival feature than a luxury; a low-power battery can wreak havoc on your data transmission, much like a noisy telephone line will.

The modem has no provision for use with acoustic modem cups, unlike the WorldPort modem which we'll get to below. Also, the modem is based on the Bell standard and doesn't work well when trying to connect with overseas modems. The Macintosh version comes with *MacTerm* software and all the necessary cabling.

At $159 the Migent is adequate, but is backed by more flash than function. Pocaro hinted at some extensive upgrades "in the next three months" but declined to give details. (Migent Inc., P.O. Box 6065, Incline Village, Nevada 89450; Phone: 702/832-3700).

Pocket Parrot

The Parrot modem from Novation gets high marks for its engineering. This modem is about the same size and weight as an ordinary audio cassette. Unlike the other modems examined here, the Parrot uses neither battery power nor a wall outlet; it draws all the power it needs from your computer's RS-232 port.

External modem users will appreciate two distinct features of the Parrot: status lights and a speaker. The four red LEDs indicate when the modem is ready, off-hook, connected to a carrier and transmitting (or receiving). The speaker is a meek sounding device, but it is a speaker nonetheless. I like speakers — in addition to status lights — because you can hear whether your call goes through or if the number you're calling is busy (or out of order, or the number's been changed, or...)

For all its technological innovation, the Parrot is the most cumbersome to hook up. Although the Migent and Worldport modems connect directly to the RS-232 port, the Parrot has no serial connector. In place of the serial connector there is modular plug similar to the one on your phone. This connector runs to a serial adapter that, in turn, must be connected to your computer. For anyone who dislikes fooling around with cables, this is a definite drawback.

I used the Parrot on a desktop IBM, a Toshiba T1100 and my model 200. The Parrot worked fine with several different communications programs. It also performed well with the Model 200's built-in communications program. But the modem was also susceptible to noisy lines. Any amount of noise on the line caused the Parrot to drop carrier.

Despite the cabling hassle, the Parrot is a bargain at only $119. (Novation Inc., 21345 Lassen St., Chatsworth, CA 91311; Phone: 818-998-5060.)

World Class

Touchbase Designs has two pocket modems: the Worldport 1200 and the Worldport 2400. Both are upgraded designs of earlier pocket modems put out by Touchbase. The experience shows.

Both modems are equipped with a serial connector; when ordering, you specify male or female connector. The choice of connectors allows you to connect the modem directly to the RS-232 port, regardless of the type on your computer. (However, if you have one of those nine-pin DIN connectors, you're out of luck, unless you're handy with a soldering iron and can fashion your own cable.)

The Worldport modems have no speaker, but they do have a set of LED status lights, including one that warns of a low battery. The modems are powered by a nine-volt battery that provides about 10 hours of continuous use. The modem shuts off automatically when you start and stop using it. They are also compatible with AC adapters.

One nice touch of the Worldport modems is that they have an adapter that allows you to use acoustic couplers. This comes in handy if you happen to be stuck in a hotel room with no modular phone jack (or if you have an affinity for telecommuting via phone booth).

These modems performed well with all the communications software packages I tried. In addition, the Worldport modem is compatible with both Bell and CCITT modems. The CCITT compatibility allows you to connect with computers overseas — no doubt giving some hint as to where the "worldport" name came from. (Most of the world, with the exception of North America, uses the CCITT standard for their modems.)

Of all the modems tested, the two from Worldport performed the best in noisy telephone line situations. Although the noise disturbed the data communications (as it will on almost every modem) the Worldport didn't drop carrier.

The Worldport 1200 lists for $199; the Worldport 2400 lists for $399. (Touchbase Designs, 169 Laurel Ave., Northport, N.Y., 11768; Phone: 516/261-0423.) ☐

Copyright © 1988 by Brock N. Meeks. All rights reserved. *Brock Meeks is a San Diego-based freelance writer. He never leaves without his pocket modem or his American Express card.*

Attention

Dealers, VARS, Consultants and other West Coast Computer Resellers

MicroTimes, California's Computer Magazine

Announces The Premiere Of

WESTERN MicroMarket

It's About Time

Western MicroMarket is a new trade magazine just for you—the computer hardware, software and service resellers that make it happen in the Western United States.

It's About Your Business

Western MicroMarket will deliver in-depth reports on the HOT ISSUES you face everyday: Distribution, Financing, Sales Management, Clones, New Products, Service, Your Competition, Vertical Applications and MUCH MORE.

You'll get the scoop on the products ready to hit your market with timely, local coverage. Take advantage of distributor and manufacturer's announcements about special spiffs and marketing promotions that will help you build your sales and profits.

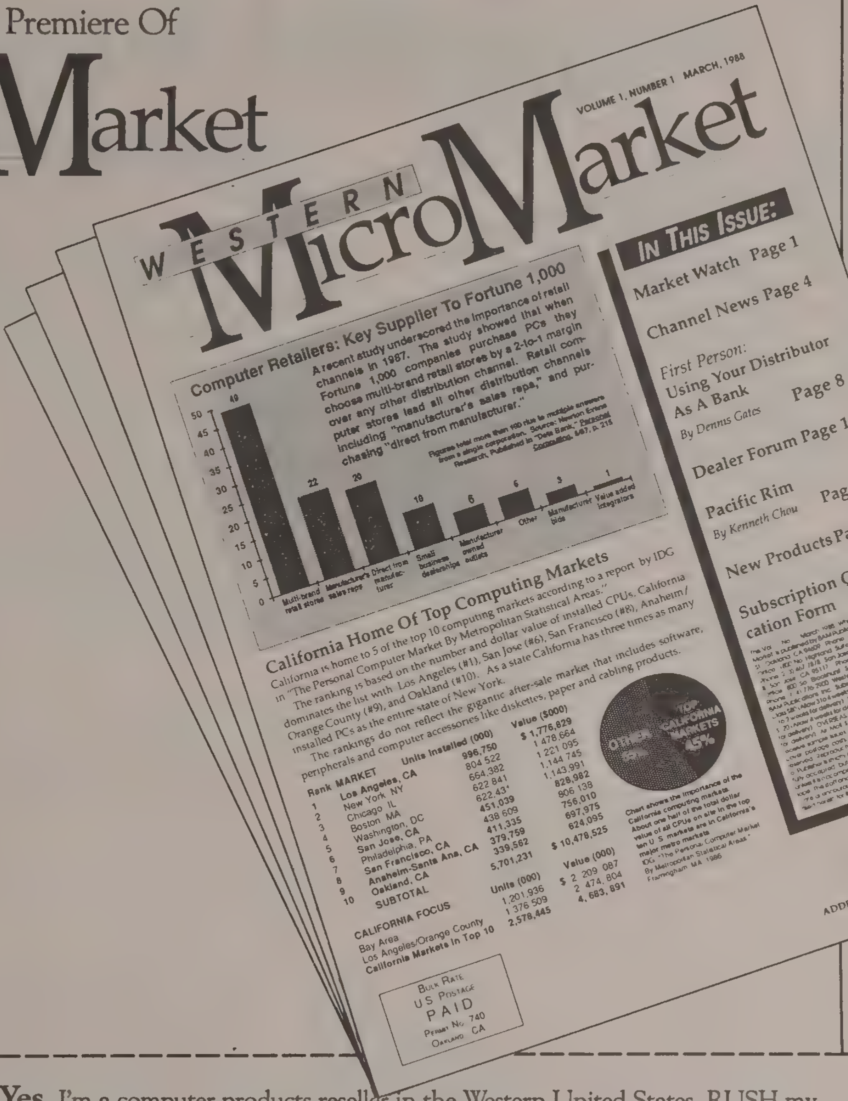
It's About You

Every issue of Western MicroMarket will feature an action-packed DEALER FORUM, where you can share your opinions about your business with over 5,000 other resellers in the most dynamic computer resale market in the country. So, get your first issue and "Send Em' A Message."

Best Of All . . . It's Easy To Get

Western MicroMarket will be delivered FREE to your office every month when you qualify as a computer products reseller in the Western United States. If you're a computer reseller, but working East of the Rockies, you can still keep-up on the hottest computing market in the nation by purchasing a year's subscription to Western MicroMarket for $120 (First Class Postage). It's not so much when you consider the company you'll be keeping.

So fill out the coupon (signature required) and we'll send you the SPECIAL PREMIERE EDITION of your trade magazine, Western MicroMarket.



VOLUME 1, NUMBER 1 MARCH, 1988

WESTERN MicroMarket

Computer Retailers: Key Supplier To Fortune 1,000

A recent study underscored the importance of retail channels in 1987. The study showed that when Fortune 1,000 companies purchase PCs they choose multi-brand retail stores by a 2-to-1 margin over any other distribution channel. Retail computer stores lead all other distribution channels including "manufacturer's sales reps," and purchasing "direct from manufacturer."

Figures total more than 100 due to multiple answers from a single corporation. Source: Newton Evans Research, Published in "Data Bank," Personal Computing, 1987, p. 215

50
45
40
35
30
25
20
15
10
5
0
49
22
20
10
6
6
3
1
Multi-brand retail stores
Manufacturer's sales reps
Direct from manufacturer
Small business dealerships
Manufacturer owned outlets
Other
Manufacturer bids
Value added integrators

California Home Of Top Computing Markets

California is home to 5 of the top 10 computing markets according to a report by IDG in "The Personal Computer Market By Metropolitan Statistical Areas."

The ranking is based on the number and dollar value of installed CPUs. California dominates the list with Los Angeles (#1), San Jose (#6), San Francisco (#8), Anaheim/Orange County (#9), and Oakland (#10). As a state California has three times as many installed PCs as the entire state of New York.

The rankings do not reflect the gigantic after-sale market that includes software, peripherals and computer accessories like diskettes, paper and cabling products.

Rank	MARKET	Units Installed (000)	Value ($000)
1	Los Angeles, CA	996,750	$ 1,776,829
2	New York NY	804 522	1 478,664
3	Chicago IL	664,382	1 221 095
4	Boston MA	622 841	1,144 745
5	Washington, DC	622,43'	1,143,991
6	San Jose, CA	451,039	828,982
7	Philadelphia, PA	438 609	806 138
8	San Francisco, CA	411,335	756,010
9	Anaheim-Santa Ana, CA	379,759	697,975
10	Oakland, CA	339,562	624,095
	SUBTOTAL	5,701,231	$ 10,478,525

CALIFORNIA FOCUS	Units (000)	Value (000)
Bay Area	1,201,936	$ 2 209 087
Los Angeles/Orange County	1 376 509	2 474, 804
California Markets in Top 10	2,578,445	4, 683, 891

Chart shows the importance of the California computing markets. About one half of the total dollar value of all CPUs on site in the top ten U.S. markets are in California's major metro markets. IDG "The Personal Computer Market By Metropolitan Statistical Areas," Framingham MA 1986

IN THIS ISSUE:

- Market Watch Page 1
- Channel News Page 4
- *First Person:* Using Your Distributor As A Bank Page 8 *By Dennis Gates*
- Dealer Forum Page 10
- Pacific Rim Page 12 *By Kenneth Chou*
- New Products Page 14
- Subscription Qualification Form Page 22

BULK RATE
U.S. POSTAGE
PAID
PERMIT No. 740
OAKLAND CA

WESTERN MICROMARKET
5951 CANNING STREET
OAKLAND, CA 94609

ADDRESS CORRECTION REQUESTED

☐ **Yes,** I'm a computer products reseller in the Western United States. RUSH my copy of the Premiere Edition of Western MicroMarket to my business address below to begin my subscription.

☐ **Yes,** I'm a computer products reseller working East of the Rockies. RUSH my copy of the Premiere Edition of Western MicroMarket to my business address below. Enclosed is a check for $120.00 to cover my First Class subscription.

THREE QUICK QUESTIONS

Which One Category Best Describes Your Company?

- ☐ 1-1 Multi-Brand Store
- ☐ 1-2 Software Specialty Store
- ☐ 1-3 Office Machine Dealer
- ☐ 1-4 Dist./Mfgr./OEM/Other Supplier
- ☐ 1-5 Systems Integrator/Consultant
- ☐ 1-6 Value Added Reseller
- ☐ 1-7 Value Added Dealer
- ☐ 1-8 Video/Record/Software Store
- ☐ 1-9 Other Mass Merchandiser/Dept. Store
- ☐ 1-0 Other ____________

Which One Category Best Describes Your Job Title?

- ☐ 2-1 Owner, Partner, President
- ☐ 2-2 Vice President, Gen Mgr., Director
- ☐ 2-3 Marketing/Sales/Merchandise Mgr.
- ☐ 2-4 Buyer
- ☐ 2-5 Branch, Store, or Dept. Mgr.
- ☐ 2-6 Salesperson
- ☐ 2-7 Technical Support/Repair
- ☐ 2-8 Consultant
- ☐ 2-9 Other ____________

Which Best Describes Last Year's Gross Annual Dollar Sales For Computers And Related Equipment At Your Location?

- ☐ 3-1 Less Than $250,000
- ☐ 3-2 $250,000 to $499,000
- ☐ 3-3 $500,000 to $999,000
- ☐ 3-4 $1,000,000 to $2,499,999
- ☐ 3-5 $2,500,000 to $4,999,999
- ☐ 3-6 $5,000,000 to $9,999,999
- ☐ 3-7 Over $10,000,000

Date ___/___/___

Signature (required) ____________________

NAME (Please Print) ____________________

Office Street Address ____________________

City ____________ ST ________ ZIP ________

Phone (________) ________-________

Publisher reserves the right to serve only those who meet qualification.

Thank you.
Send Completed Form To:

WESTERN MicroMarket
Subscription Manager
5951 Canning Street
Oakland, CA 94609

(415) 652-3810

LINKS

Nonprofits Meet Computers

By Mary Eisenhart

If you're a personal computer user who'd like to help deserving folks into the electronic age, Daniel Ben-Horin wants to talk to you.

Ben-Horin is the director of the San Francisco-based CompuMentor Project, an organization in its second year of providing volunteer help to non-profit organizations struggling to bring their operations up to date using computer technology. He conceived the idea for the project while working as director of Media Alliance, which had set up its own center for providing technical help to fledgling computerists in the form of a training center; the prospective trainees would be taught to use the machines and software at the center, then return to their various work sites.

"In principle," he observes, "that makes a lot of sense. In practice, there *is* something different about computers — it's not like learning how to operate a Xerox machine where you have a one-day session on a fancy Xerox. It's more interactive, it's more open-ended, and it has all this subjective weight. People who are outside computer culture are acutely aware of being outside, and in some ways to try to get in means becoming a beginner again. That's threatening."

"These are people," he continues, "who are working incredibly hard for very little financial reward. They're working with the homeless because they want to help the homeless, not because they want to become computer experts and learn *Lotus* in their spare time."

As part of his own induction into computer literacy, Ben-Horin began accessing The WELL and was amazed by the community spirit which prevailed among the denizens of this online world. "What really struck me about the WELL, from an organizer's standpoint, was this incredible sharing ethos. I would say that a month of having access to people answering my dumb computer questions just removed an emotional block for me. I no longer felt frightened about playing with my computer. It became something I could play with, and then I learned it.

"I just started thinking, what if that kind of information sharing was available to the people who really needed it, and what if these people became big brothers and sisters and were there in sort of a hands-on presence?"

> **CompuMentor's Daniel Ben-Horin: "These are people who are working with the homeless because they want to help the homeless, not because they want to become computer experts and learn Lotus in their spare time."**

Ben-Horin proposed his plan to the Oakland-based Skaggs Foundation and received a seed grant of $7,500 for a year. In October 1986 he launched a conference on the WELL in which nonprofit organizations could solicit volunteer help from the community of WELLbeings, and has been matching mentors with nonprofits ever since.

One of the earliest beneficiaries of the project was San Francisco's DES Action, which supports victims of DES-related medical problems and disseminates information about the problem. It operates out of a tiny office in the Mission District and, at the time they came to the project's attention, its two staffers were being crowded out by a massive donated computer they weren't even sure worked. (The problem of dealing with esoteric donated equipment is frequent, says Ben-Horin, and the equipment sits in the office as an alien and frightening presence. "They've given up their precious space, and also a certain amount of self-confidence. 'Something that big ought to work — it was given to us by friends, what's wrong with us?'")

Ben-Horin posted DES Action's plight on the WELL, and Maurice Weitman came to the rescue. Weitman ascertained that the donated computer was, in fact, not of much use. After some discussion with the organization's directors, he discovered that they were paying a mailing list house nearly $3,000 per year to maintain their member list and print labels quarterly. He also discovered that they had a small grant for purchasing computer equipment.

Weitman helped DES Action get a good price on a Mac Plus, an ImageWriter, a hard disk and some application packages. He got a magnetic tape of the mailing list from the outside service, converted its information to Mac-readable format. As a result, the organization was able to print its own labels in a matter of hours, at a cost of $5 for the blank labels. They also used the Mac for correspondence, newsletter preparation, accounting and a host of other functions.

Other organizations serving a wide variety of needs reported similar success from the efforts of their WELL mentors. Encouraged by these results, Ben-Horin is now expanding the scope of the effort. The CompuMentor Project has now received grants from organizations from Apple Computer to the San Francisco Foundation, and is actively seeking volunteers to assist a broader range of nonprofits — ideally, he says, matching not just needs and skills, but interests, so that mentors assist groups whose work they themselves support.

Using this approach, he hopes, "a small amount of foundation funding can be leveraged into literally millions of dollars" in technical assistance and other support.

The problems nonprofits encounter, he says, are as varied as the groups themselves. Some are not yet computerized at all, and are bewildered by choruses of conflicting advice. "Often they're in the hands of someone like a typesetter who says 'No, you have to get a PC. I can only handle IBM files.' And they get bad information from self-serving vendors." In such a situation, the reassuring presence of someone who can assess their needs and options and steer them toward good products and prices is invaluable.

In other situations, the group may be saddled with obsolete, broken or otherwise orphaned equipment, or several exotic varieties of machines that don't talk to each other. In some cases, they're faced with converting files generated on an ancient computer to something a Mac can read. And in others, they're just plain scared. "Sometimes groups call, and they've got a really pretty trivial question," says Ben-Horin. "And you sort of want to say, 'Read the manual, it's really not that hard.' We don't say that. We say, "Here's a person you can call." And sometimes they don't call, and then we call them later and they've solved the problem for themselves. I think it was just knowing that they had a backup."

Eventually, he'd like to see CompuMentor evolve into a national organization supported by the computer industry itself. "People who get into computers are into the free flow of information. They're into helping, enough of them to make this a viable prospect. The long-range prognosis is to get computer corporations to buy into the idea."

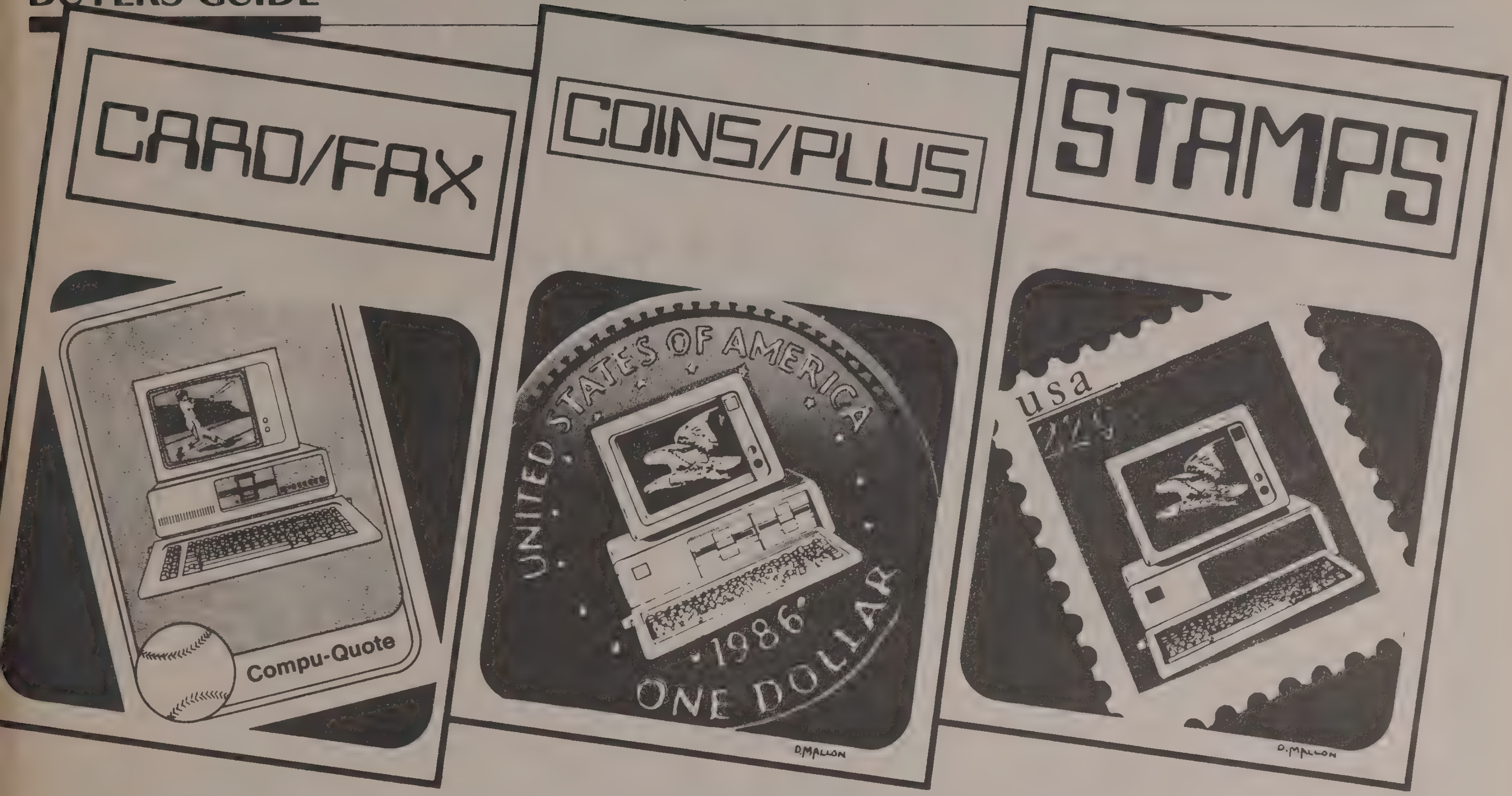
In the short term, CompuMentor needs mentors at all levels of expertise, not just wizards and power users, familiar with a wide variety of systems. At the moment, Ben-Horin says, there's a crying need for MS-DOS and CP/M expertise, as well as an ongoing need for those familiar with obsolete and orphaned machines.

If you're interested, and you think you can help, call Randy Dunagan at (415) 282-4648, or write to CompuMentor, 272A Connecticut, San Francisco, CA 94107. ☐

In the continuing onslaught of more powerful machines and spiffier software, providing us with ever-better tools and toys, it's easy to lose sight of another profoundly influential aspect of the personal computer revolution—its impact on the larger community of which computer users usually comprise only a small fraction.

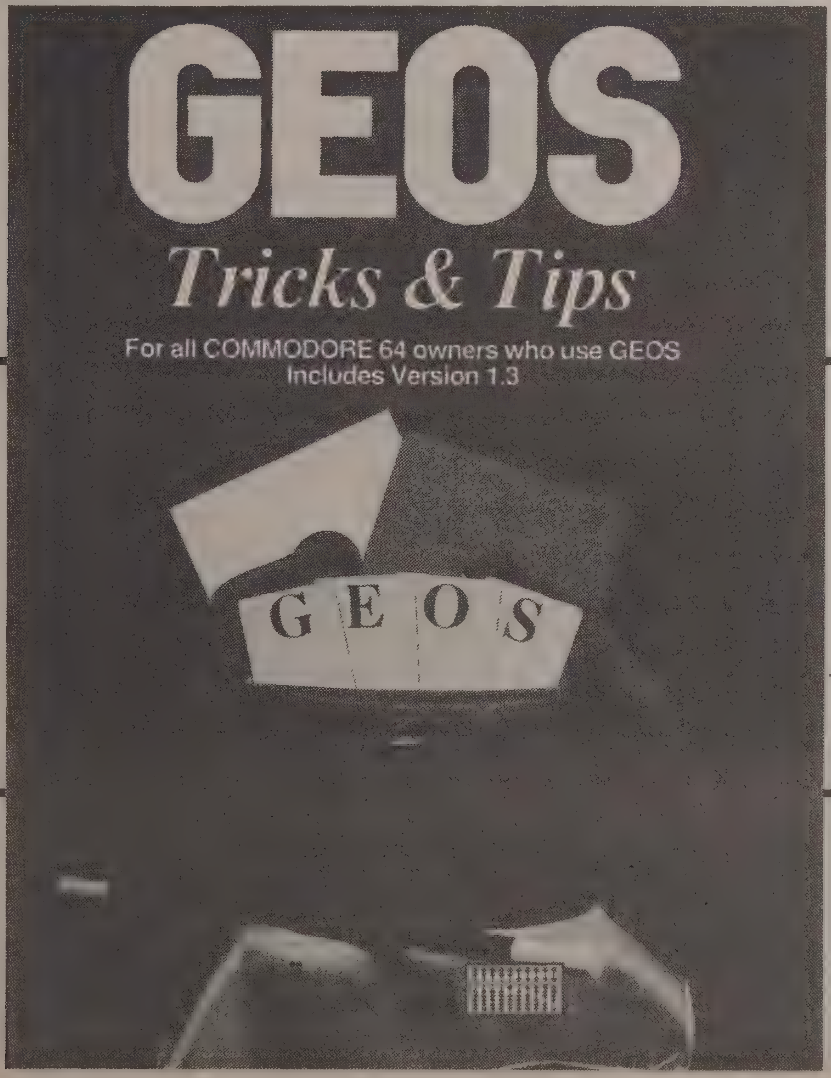
Links is a column dedicated to exploring the role of the personal computer in the community, whether local or global—bulletin boards operated by local governments, computers in the operations of service organizations, the use of computers in grass-roots political and social campaigns, and a host of ingenious applications we haven't heard about yet.

We welcome your feedback and suggestions for future subjects of this column. Please send them to Links, MicroTimes, 5951 Canning Street, Oakland, CA 94609, or send email to microx on The WELL at (415)332-6106.


CARD/FAX
Compu-Quote
COINS/PLUS
UNITED STATES OF AMERICA
1986
ONE DOLLAR
STAMPS
usa
D.MALLON
D.MALLON

Software For The Serious Stamp, Coin Or Baseball Card Collector

Coins/Plus, *Stamps* and *Card/Fax* are three programs from Compu-Quote that help serious collectors keep track of their valuable coin, stamp or baseball card collections. *Coins/Plus* for example covers more than 2,300 U.S coin issues in all A.N.A. grades, uses convenient standard coin numbers and instantly shows current market values along with automatically updating prices each year. All three programs are useful for keeping detailed lists for insurance purposes, estate planning, collection control and investment tracking. The Compu-Quote programs produce comprehensive reports including collection summary reports, sold reports, want lists and value reports. ($95.00, yearly updates $25.00.) Available for IBM, Macintosh and other machines. Compu-Quote, 6914 Berquist Ave., Canoga Park, CA 91307. (818) 348-3662.


GEOS
Tricks & Tips
For all COMMODORE 64 owners who use GEOS
Includes Version 1.3
G E O S

Pull A Rabbit Out Of Your C64 With GEOS Tricks & Tips

GEOS Tricks & Tips written by Manfred Tornsdorf and Ruediger Kerkloh, and published by Abacus Software, is a companion to the book *GEOS Inside & Out*. It includes over 50 tricks and tips for users of the popular Commodore operating system, including setting up form letters in *geoWrite*, writing your own error messages, altering the notes icon and moving documents quickly in geoWrite. It also tells you how to modify the GEOS program operation to suit your preferences. An optional program diskette is available for this book that contains all of the programs listed in the book, ready to run and error free. Abacus Software, P.O. Box 7219, Grand Rapids, MI 4951. (616) 241-5510.

The Love Connection:

Word Processing With A TOPS Network

By Robert Beauchamp

Item from the San Francisco Chronicle: Commenting in Advertising Age on the success of the movies…which deal with unexpected arrivals, Jonathan Lewin suggests these variations: "The Chicago Bears and a Baby" in which Jim McMahon finds a baby in the huddle, "The Supreme Court and a Baby" in which President Reagan nominates a baby to a seat on the court enabling it to serve for 75 years, and "Infant Compatible" in which a Macintosh and an IBM PC raise a baby with the help of a parenting disk.

When I took on the project of writing a column on connecting Macs to PCs, I never thought of myself as a dating service. As evidenced from the clip above, however, it seems that the problems surrounding Macintosh and PC compatibility are so well known that they gain a spot in a major newspaper along with the likes of Jim McMahon and President Reagan. In the gossip column no less. It also seems that while the computer press may foster an antagonistic rivalry between Macs and DOS machines, the owners of these machines are more interested in getting together and, dare I say it, making connectivity.

When I first introduced Boris, my 286 clone, to Natasha, my Mac Plus, I did so using a TOPS network from Sun Microsystems. TOPS is a lot like those 976 party lines teenagers spend their afternoons on. You can say anything you want and impress whomever you want without things like income, popularity, or personal appearance getting in the way. By directly connecting your computers with TOPS, you can strip away the problems of incompatible disk sizes and formats, allowing you to work on files created by another incompatible machine. Because when you get right down to it, bits and bytes, like love, are universal.

Last month's column detailed the setting up of the hardware necessary to run a TOPS network. This month we'll cover some of the features of TOPS and how to use them to your advantage in one of the areas most in need of Mac to PC connectivity: word processing.

The most common problem that arises from incompatibility has to do with the massive number of word processing files that have been created over the years. As old word processors become, well, old, and are traded for new ones, and as old machines share the same fate, a backlog of files builds up. As we now face the age of the 3-1/2" floppy disk, it's becoming harder and harder to ignore that stack of 5-1/4" wallflowers sitting forlornly in the corner. A TOPS network is extremely useful for those who desire to work with files from older word processors, transfer files from 5-1/4" disks to 3-1/2" disks, or use files created on a DOS machine on their Macintosh.

> **Each computer on the TOPS network is called a station. Each computer can use files from other stations as a client, and in turn offer its own files to the other computers on the network as a server.**

Networking With TOPS

Once up and running TOPS is, for the most part, self-explanatory. There are several concepts, however, that it is important to know before getting started. There are also a few details of operation which are not self-evident and which, once known, make things a lot easier.

Each computer on the TOPS network is called a station. Each station can act as either a client or a server. This means that each computer can use files from other stations as a client, and in turn offer its own files to the other computers on the network as a server. A give-and-take relationship to satisfy the most ardent Oprah watcher.

There are also security features, for those interested in practicing safe computing. Other stations on the network can only access those files that you yourself put on the network, leaving the rest of your files secure. You can provide further security by requiring a password on the files you do put on the network. TOPS also lets you offer your files as read only, making it impossible for those accessing your files to alter them.

To allow others to access your files, you must publish them on the network. To do this on the Macintosh, you pull down the apple menu and choose TOPS. If you've used the Font/DA mover, the TOPS desk accessory will look familiar. On the left side is an icon representing your station and under it the space where the floppy disks, hard disks and RAM disks on your computer are represented. On the right side are the other stations and their corresponding published volumes.

To publish a volume, you simply double click its name and then click publish. It is important to note that you must put your files in a folder in order to publish them. A file by itself is not considered by TOPS to be a volume. As long as a file is in a folder, even a single file, it is considered a volume and thus publishable.

To use files from another station you use the same menu and click mount. Once you've mounted a volume you can pick and choose from among the files contained therein.

At this point you can decide if you want to work with files directly off the other station's disk drive or copy those files to your own drive. From this menu you can also copy a file from your drive to another station's drive.

On the DOS machine, things are a little bit different. Once you've loaded TOPS you can use either the TOPS menu or give commands at the DOS prompt, which is also called the command line. The TOPS menu on the PC doesn't have the same convenient menu as the Macintosh. It is still easy, however, to publish and mount files. The major difference is that once you've mounted a volume from another station, TOPS creates a fictional disk drive to hold those files. If your PC system has a hard disk and two floppy drives then the fictional drive will be called D:. The next mounted volume will be called E: and so on.

Unlike the Mac menu, the PC menu does not allow you to copy files directly from the

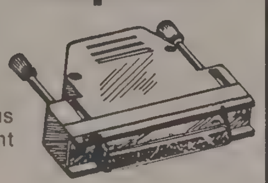
LARGE BUYERS
&
SMALL BUYERS
SAVE MONEY AT EAGLE

COMPUTER PARTS, HARDWARE & CABLE

Phone or Write for
our Catalog.
(818) 244-3191
(213) 245-2338
or 1-800-992-3191

RS-232 to Modular Plug Adapters

Allows use of 4-6-8 conductor telephone wire for interconnection or RS-232 devices

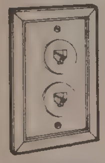


Using telephone cable between computers and various peripherals speeds up installation, moving equipment becomes simple with snap in/snap out connectors.

EAGLE NO.	DESCRIPTION	
25M-8 ......DB-25	Male to 8 Pin RJ Jack	1-9 .... $3.95
25F-8 ......DB-25	Female to 8 Pin RJ Jack	
25M-6 ......DB-25	Male to 6 Pin RJ Jack	10-49 ..... $3.75
25F-6 ......DB-25	Female to 6 Pin RJ Jack	
15M-8 ....DB-15	Male to 8 Pin RJ Jack	50-99 ..... $3.25
15F-8 ....DB-15	Female to 8 Pin RJ Jack	
15M-6 ....DB-15	Male to 6 Pin RJ Jack	100 up $2.95
15F-6 ....DB-15	Female to 6 Pin RJ Jack	
9M-8 ....DB-9	Male to 8 Pin RJ Jack	
9F-8 ....DB-9	Female to 8 Pin RJ Jack	
9M-6 ....DB-9	Male to 6 Pin RJ Jack	
9F-6 ....DB-9	Female to 6 Pin RJ Jack	

MODULAR WALL PLATES

SINGLE



DOUBLE

	4 CONDUCTOR		6 CONDUCTOR		8 CONDUCTOR	
	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE
1-24	2.49 ea	3.69 ea	3.69 ea	4.29 ea	4.95 ea	7.95 ea
25-99	1.80 ea	2.49 ea	2.69 ea	3.29 ea	3.75 ea	5.50 ea
100 +	1.20 ea	1.60 ea	1.80 ea	2.19 ea	2.50 ea	3.80 ea

Computer Cable

- RS 232 CABLES

MULTI-CONDUCTOR SHIELDED

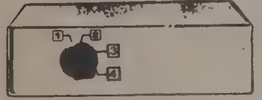
- TWINAXIAL CABLE
- SHIELDED TWISTED PAIRS

- RG 62 COAXIAL
- RG 59 COAXIAL
- DUAL COAX (WANG COMPATIBLE)
- ETHERNET CABLE
- APPLE TALK NETWORK

PLENUM CABLE

If you are installing fire protection cables in air plenums, call Eagle Electronics for competitive prices.

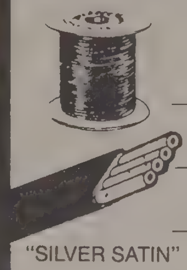
Computer Data Switches



HIGH QUALITY ROTARY SWITCHES. ALL PINS ARE SWITCHED.

	1-9	10-UP
• 25 Pin DB-AB (1-2)	$29.95	$22.95
• 25 Pin DB -ABCD (1-4)	$39.95	$32.95
• 36 Pin Centronics-AB (1-2)	$39.95	$29.95
• BNC	$39.95	$29.95
• TWINAX	$69.95	$59.95

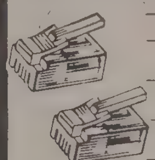
FLAT MODULAR CABLE



"SILVER SATIN"
GREY

	4 CONDUCTOR	6 CONDUCTOR	8 CONDUCTOR
1000 FT	31.00/M	52.50/M	68.20/M
5000 FT	25.50/M	43.00/M	56.00/M
10,000 FT	22.50/M	38.50/M	49.75/M

MODULAR CONNECTORS



	4 COND	6 COND	8 COND
10 pc	2.95	3.95	4.95
50 pc	10.95	12.95	14.95
100 pc	19.95	22.95	24.95
1000 pc	115.00	135.00	169.00

MODULAR CRIMPING TOOLS

STEEL BODY WITH SOFT PLASTIC GRIPS

4 or 6 COND.	8 COND.
12.95	19.95

BNC CONNECTORS & ADAPTORS

BNC CRIMP

10-49	.69 ea.
50-99	.64 ea.
100-999	.59 ea.

79¢ each

BNC TWIST-ON

10-49	1.10 ea.
50-99	.99 ea.
100-999	.90 ea.

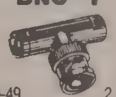
1.69 each

BNC SPLICE

10-49	.92 ea.
50-99	.85 ea.
100-999	.78 ea.

99¢ each

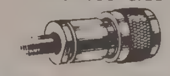
BNC "T"



10-49	2.30 ea.
50-99	2.12 ea.
100-999	1.95 ea.

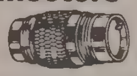
2.69 each

Twin-ax Connectors



10-49	2.90 ea.
50-99	2.65 ea.
100-999	2.45 ea.

3.29 each



10-49	3.69 ea.
50-99	3.35 ea.
100-999	3.09 ea.

3.99 each

TNC Connectors

10-49	1.74 ea.
50-99	1.58 ea.
100-999	1.41 ea.

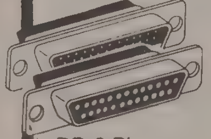
1.99 each

10-49	1.55 ea.
50-99	1.42 ea.
100-999	1.32 ea.

1.69 each

We have one of the largest selections of connector supplies on the west coast

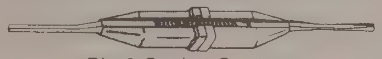
D-Sub-Miniature Connectors (Shells)



Industry standard connectors for data cables - computer systems - peripherals. Connectors feature insertable pin and socket contacts that are easy to insert or remove.

	1-9pcs	10-24pcs	25-49pcs	50-99pcs	100-999pcs
DB-9 Plug	.72	.55	.50	.40	.34
DB-9 Socket	.72	.55	.50	.40	.34
DB-15 Plug	.76	.59	.54	.44	.38
DB-15 Socket	.76	.59	.54	.44	.38
DB-25 Plug	.78	.61	.56	.46	.40
DB-25 Socket	.78	.61	.56	.46	.40

INSERTION/EXTRACTION TOOL



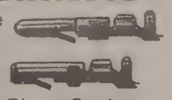
Pin & Socket Contact

$2.95

CRIMP TYPE CONTACTS

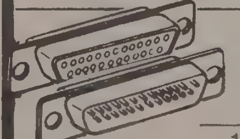
Gold plated contacts are crimped to wire using a hand crimp tool.

$7.00/$100
$55.00/$1000



Pin or Socket
(male or female)

D-Sub-Miniature Connectors



Fixed Contact Solder Cup

Industry standard connectors for: data cables, computer systems - peripherals.

	1-9pcs	10-24pcs	25-49pcs	50-99pcs	100-999pcs
DB-9P Plug	.69	.49	.39	.35	.32
DB-9S Socket	.72	.54	.42	.39	.35
DB-15P Plug	.85	.65	.51	.47	.43
DB-15S Socket	.97	.77	.60	.55	.50
DB-25P Plug	.97	.77	.60	.55	.44
DB-25S Socket	.97	.77	.60	.55	.44

EAGLE ELECTRONICS

ESTABLISHED 1963 1233 E. COLORADO BLVD., GLENDALE, CA 91205
(818) 244-3191 1-800-992-3191 (California) (213) 245-2338 Fax No. (818) 244-0466

NEED LARGER QUANTITIES? CALL FOR A COMMERICAL QUOTE mounted volume. To copy files you must exit to DOS and then use the DOS copy command, using the D: volume as if it were a drive. For example to copy a file from the mounted volume to your hard disk, you would simply type:

copy d:*filename.spec* c:.

Another aspect of TOPS that you'll have to consider is that it is memory resident. This means that it takes up part of your RAM, leaving less room to run your other applications. If you get an insufficient memory message, you'll have to copy the files you want to work on from the D: drive onto another disk, exit TOPS and reboot your computer.

Word Processing

There are two ways that TOPS can help you with your word processing tasks. Both of them will cause the most hardened and cynical word processors to get down upon their knees and sing hallelujah. The first way is with the help of products from Microsoft, such as *Word*, which is available in both the Macintosh and PC versions. The second is with a utility that comes with TOPS called the TOPS Translator.

Microsoft has paid special attention to the connectivity issue and made *Word* for each machine fully compatible. What this means is that if you're on your Macintosh and want to work with a *Word* file that was created on a DOS machine, all you have to do is open up the file from within *Word*, and it automatically converts to the Mac interface and functions exactly as if it were a Macintosh *Word* file. This eliminates the need to first convert the file into an ASCII file and then open it up again only to find strange little characters left over from the first program's formatting codes. When you open up the *Word* file on the Mac, it is clean and maintains the formatting given to it on the PC.

> **If you're on a Macintosh and create a file you know someone on the network is going to use in *Word* on the PC, save it in MS-DOS format. This will allow the PC user to use that file as if it was created on a DOS machine.**

From the DOS side, things are again done a little differently. When you are about to save a *Word* file on the Mac, it gives you the option of choosing which format you wish to save it in. One of those options is Word (MS-DOS Version). If you know someone on the network is going to use this file in *Word* on the PC, save it in this format. This will allow them to use that file as if was created on a DOS machine.

Since files on the PC, when mounted, are kept on the fictional D: disk, you must press **D: F1** when you are at the load prompt in *Word* on the PC. This gives you a list of those files that are in the mounted volume. You may notice, however, that not all the files, if any, that are on the mounted volume are listed. This is because *Word* on the PC only recognizes those files that have *names* conforming to the DOS standard. It is very important to remember, therefore, that in order for files to be accessed from within *Word* on the PC *the file names must conform to the DOS eight character-period-extension format.* For example, a file named Notes For Chuck on the Mac, will not be seen by *Word* on the PC, whereas the same file named CHKNOTES.DOC will.

TOPS Translators

The TOPS Translators utility that comes with the Mac version of TOPS is truly a stroke of genius on someone's part. While many new programs, such as *Word*, automatically translate from the Mac to the PC, there are a lot of *WordStar* and *MultiMate* files out there that many people would like to convert to *MacWrite* or *Word*. The TOPS Translator's screen looks again like the Font/DA mover. On one side you have your choice of formats and on the other side the files you wish to format. You simply choose the file and the format and click convert. TOPS Translators also has formats for popular spreadsheets and databases as well.

If you're a word processor who has to deal with incompatible files, new disks or new machines, the TOPS network is a perfect solution. It's one of those systems that actually solves a major productivity problem without creating more problems. Once you have grasped the major concepts and have worked your way through a few easily overcome roadblocks, you'll be well on your way to becoming a network star. You're at least bound to become someone's sweetheart, as you impress them by doing what they thought for sure was impossible.

Who knows, maybe your computers won't be the only ones in your office connecting. □

Wholesale to the Public

—ONE MONTH ONLY—
(Sale Ends 4-30-88)

NEW

GENIUS MOUSE
Includes: Paint (Dr. Halo) Mouse Pad **$59**

COPY II PC
Option Board (Latest Version 4.5) **$69**

ZOOM MODEM
2400 Baud Internal
100% Hayes Compatible
2 Year Warranty **$119**

PC TOOLS DELUXE
(New Version 4.21)
PRODUCT OF THE MONTH **$45**

COPY II PC SOFTWARE for IBM **$19.95**

BUS MOUSE
C-7 Plus Package
(3.4 Version Software)
$69

CRAFT MOUSE
Serial
$35
$5 REBATE

Copy 2+ for Apple . . .$19.95
Copy 2+ for Mac 19.95
Logimouse C7 Plus Pkg. 65
Logimouse w/ Publ. & Paint 109
Avatex 1200E Ext. Modem 79.95
Kat for Mac by Koala . .$25 (Close Out)
PC Paint Brush. 19.95
Speed Key System . . . .25 (Close Out)
Dress Code Computer Cover . . . . .10 (Close Out)

GENERIC CADD
Includes Dot Plot
(Latest Version) **$39.95**

SPECIAL
2400 Baud
Internal Modem
100% Hayes Compatible
$99

AVATEX 2400 External Modem
Incl. software & built in speaker
(2 Yr. Warranty)
$179

A.J. Computer Supplies
P.O. BOX 3548, Seal Beach, CA 90740
(714) 840-8743

TERMS: All products factory warranty only. All mail orders must be cashiers check only. 6% tax and $4 shipping in California. $1 shipping for each addl. item. CALL FOR QUANTITY PRICING.

NEW . . . PARALLEL BUFFERS

IMC PARALLEL PRINT BUFFERS

Combines The Functions Of A Data Switch With The Power Of A Printer Buffer In A Design Featuring Ease Of Operation and Maximum Versatility Towards Meeting Printer Networking Needs.

Part No. PBII

1 Input to 1 Output 256K

Suggested Retail **$259**

Part No. PB42

4 Inputs • Select 2 Outputs 256K

Suggested Retail **$469**

Part No. PB22

2 Inputs

Select Any 2 Outputs 256K

Suggested Retail **$289**

Part No. PB64

6 Inputs • Any of 4 Outputs 512K

Suggested Retail **$695**

Available from:

Lewis & Lewis Enterprises **805-644-7405**
1600 Calens Road   Ventura
1st Computer **213-470-2501**
1740 Westwood Blvd.   Los Angeles
MicroAge Computer Store. **213-652-7770**
8501 Wilshire Blvd. #110   Beverly Hills
MicroAge Computer Store **213-622-5750**
707 West 7th St.   Los Angeles
Computerland **714-544-0542**
18331 Irvine Blvd.   Tustin
Dav-tech Computer Center **213-463-3001**
6314 Hollywood Blvd.   Hollywood
Hi-Tech Resources **818-995-4538**
4750 Kester Ave., #10   Sherman Oaks
Horizon Computer Center **714-261-6005**
18025 Skypark East #H   Irvine
Rancho Bernardo Computer **619-485-6838**
16496 Bernardo Center Drive   San Diego
Jaguar Computer Systems **714-734-5280**
4135 Indus Way   Riverside

See us at COMDEX/

May 9–12, 1988
Georgia World Congress Center
Atlanta, GA   Booth #115

IMC INTEGRATED MARKETING CORPORATION

1031 E. Duane, Suite H
Sunnyvale, CA 94086
Telex 5106018576
Fax 408-730-1452

TO ORDER CALL TOLL FREE

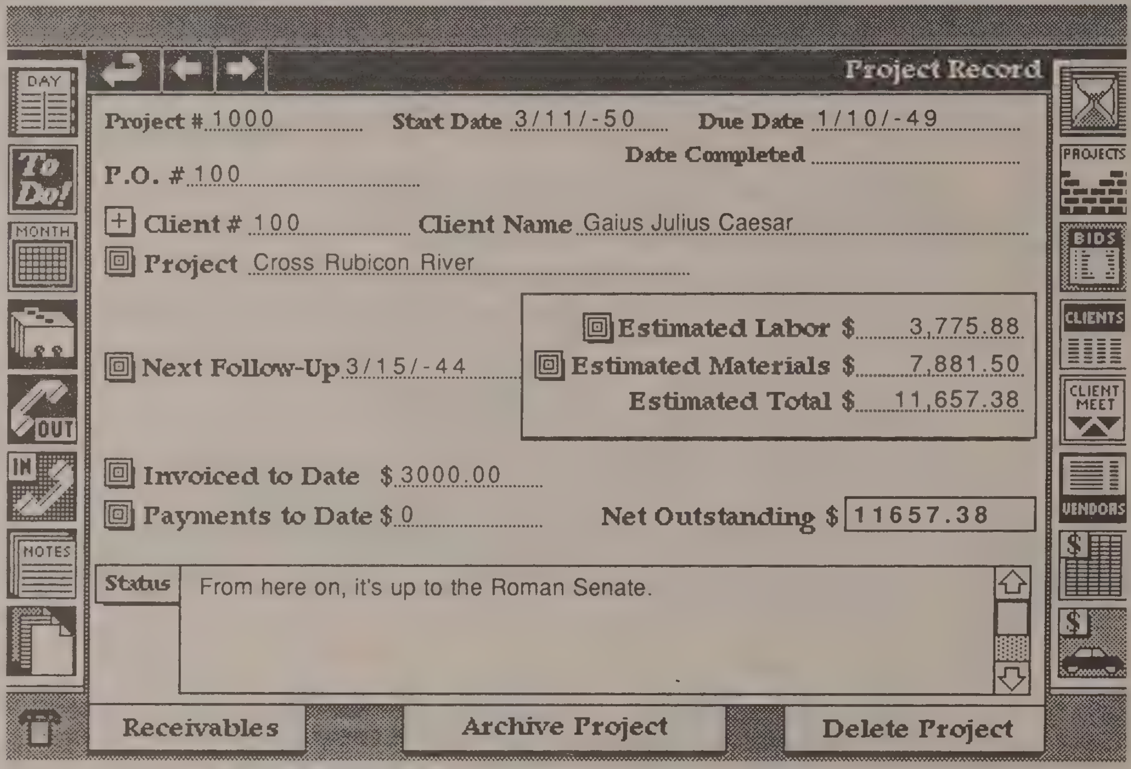
Dealer, OEM & Corporate Inquiries Welcome

800-537-5999

INTERFACE TOOLS

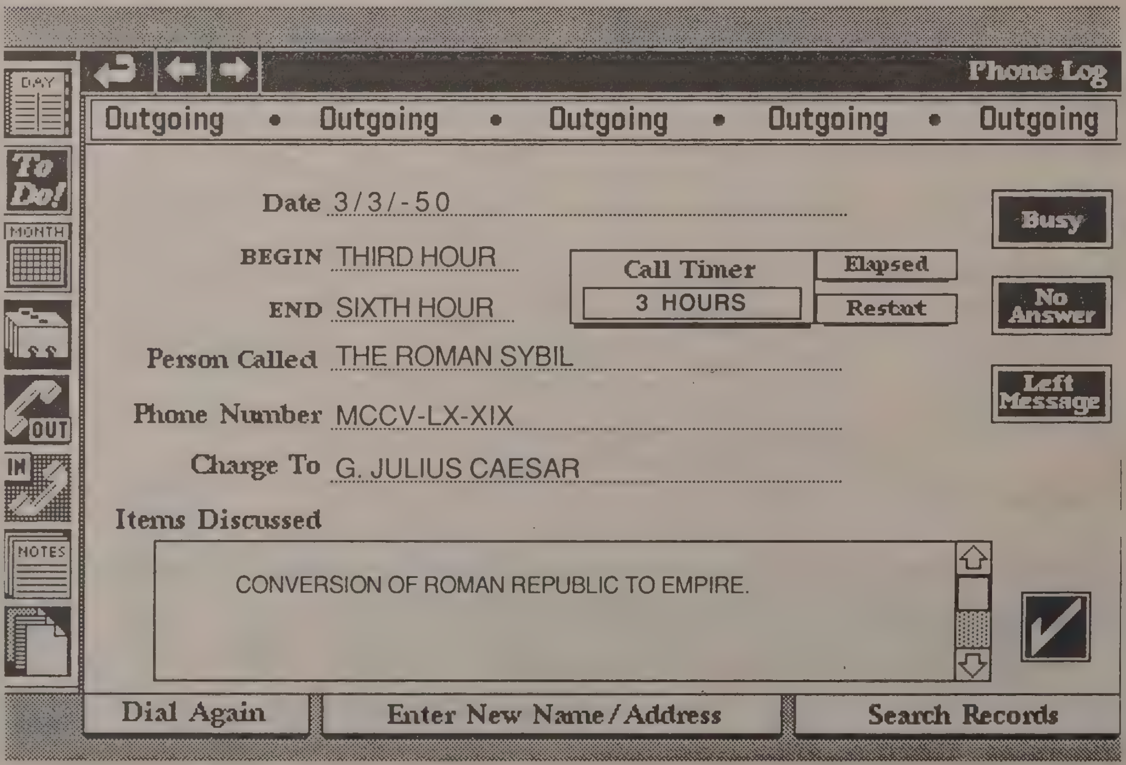
Organize Your Small Business With Focal Point

By Birrell Walsh


DAY
To Do!
MONTH
OUT
IN
NOTES
Project Record
PROJECTS
BIDS
CLIENTS
CLIENT MEET
VENDORS
$
Receivables
Archive Project
Delete Project

Project # 1000 Start Date 3/11/-50 Due Date 1/10/-49
Date Completed
P.O. # 100
Client # 100 Client Name Gaius Julius Caesar
Project Cross Rubicon River
Estimated Labor $ 3,775.88
Next Follow-Up 3/15/-44
Estimated Materials $ 7,881.50
Estimated Total $ 11,657.38
Invoiced to Date $ 3000.00
Payments to Date $ 0
Net Outstanding $ 11657.38
Status From here on, it's up to the Roman Senate.

Julius Caesar uses Focal Point to plan his political future.


DAY
To Do!
MONTH
OUT
IN
NOTES
Phone Log
Outgoing • Outgoing • Outgoing • Outgoing • Outgoing
Busy
Call Timer
Elapsed
Restart
No Answer
Left Message
Dial Again
Enter New Name/Address
Search Records

Date 3/3/-50
BEGIN THIRD HOUR
END SIXTH HOUR
Call Timer 3 HOURS
Person Called THE ROMAN SYBIL
Phone Number MCCV-LX-XIX
Charge To G. JULIUS CAESAR
Items Discussed
CONVERSION OF ROMAN REPUBLIC TO EMPIRE.

Danny Goodman is the man who wrote the book on *HyperCard*. His *Complete HyperCard Handbook* has sold several hundred thousand copies in its first few months. Now Activision has published Goodman's *Focal Point*, one of the first commercial applications based on *HyperCard*. The program allows anyone to organize a small practice of any sort — consulting, free-lance writing, or any business where the information and contact lists threaten to overwhelm you. *Focal Point* has the virtues, and the vice, of *HyperCard*.

The vice is "too many buttons." The opening screen of *Focal Point* gives way to a screen so full of options as to be daunting in itself. You can go to any of 18 different activities in *Focal Point*, and 16 of them have a button on the datebook screen. In practice, these buttons are very useful. At first glance, though, you wonder if you will ever be able to master it all.

The advantage to the small business user is that each of these buttons represents something that you do every day. There are buttons for incoming and outgoing calls. There is a button that leads you to a very usable address book, with a built-in telephone dialer and a note section for each entry. You have access to a calendar for your day or your month — and they interlock so you can put a reminder into the monthly calendar from the daybook, or vice versa. You can even launch other applications from within *Focal Point*. *Excel*, *Word* or your other favorites can be started within the program; when you leave them, you are returned to *HyperCard*.

> **One of the advantages of Focal Point is the advantage of HyperCard itself — you can jump from one thing to another. In the still-not-very-multitasking Mac environment, this ease of connection is a blessing.**

I was particularly delighted with *Focal Point*'s financial devices. I have never enjoyed keeping

APPLE COMPATIBLE DISK DRIVES

½ Height Apple Comp.	$89
Full Height Apple Comp	.99
IIc ½ Height Floppy Drive	.95
Macintosh 800K	.170
Apple IIgs Drive	.165

APPLE TYPE CARDS

IIe 80 column w/64K	$44
IIe Column w/128K	.59
Disk Controller	.42
Parallel Interface	.40
Graphics Parallel	.59
16K RAM Card	.34^{95}
Super Serial Card	.69
CPM Card	.29

DISKETTES

DS DD 5¼″ Box of 10	.4^{50}
High Density Box of 10	.$13
DS DD 3½″ 10 Pieces	.14^{50}
Apple & IBM Joysticks	$22
6 Outlet Surge Protector	.9
Apple II, II+ Joysticks	.15

MOUSE SPECIALS

M-2 Mouse w/Microsoft & PC Mouse Software	$64
Genius Mouse w/Driver Software & Dr. Halo III & Mouse Pad	.69
OPTICAL Mouse	.99
Mouse Pads	.6

CHIPS

Due to Price War Please Call For Best Prices
16K, 64K, 256K, 1 Meg 2716, 2732, 64, 256, 8087, 8087-2, 80287-6, 80287-8, 80287-10

STOP

AND COMPARE OUR PRICES

IBM COMPATIBLE DRIVES

TEAC 55BV ½ Height 360K	$80
Fujitsu ½ Height 360K	.75
Toshiba 1.2 Meg AT	.99
Toshiba 3½″ 720K with 5¼″ mounting kit	.99
Toshiba 3½″ 1.44MB	.119

IBM TYPE CARD

Floppy Controller	$34
XT 1.2MB Floppy Controller	.52
Clock Card	.34
Serial Card	.34
Multi I/O	.52
Hard Drive Controller	.65
Hard Drive RLL Controller	.75
Monochrome w/Print	.49
DOS 3.2/3.3 w/GW BASIC	.69/92
20 Meg w/Controller	.259
30 Meg w/Controller	.$319
Samsung Amber Monitor	.80
Clock Card w/Serial Port	.44

MODEMS & CABLES

IBM 1200 Baud Internal	$69
1200 Baud HC AVATEX	.109
2400 Baud External	.149
1200 HC EXTERNAL	.79
300 Baud External	.44
6′ Parallel Cable	.8
Serial M-M or M-Female	.8
IIc Modem Cable	.10
Macintosh Modem Cable	.10
IIe to IIC Drive Adapter	.10

We Ship Daily • 90 Day Replacement Warranty
DEALER Inquiries Welcome • Minimum $2 Shipping Charge
No Charge Cards Accepted

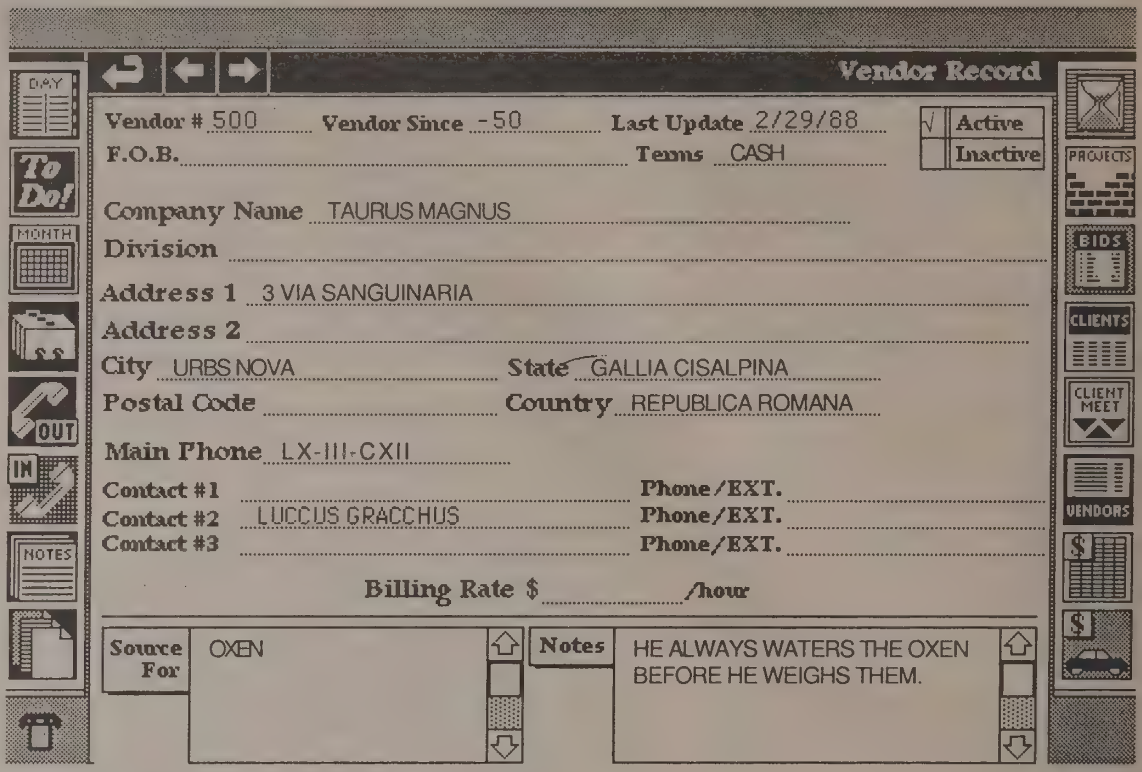
GUENTHER
COMPUTER PRODUCTS INC.

312 Locust St.
Santa Cruz, CA 95060
New Larger Location To Serve You Better

(408) 458-9404

Please Include
$2 Minimum Shipping Charge

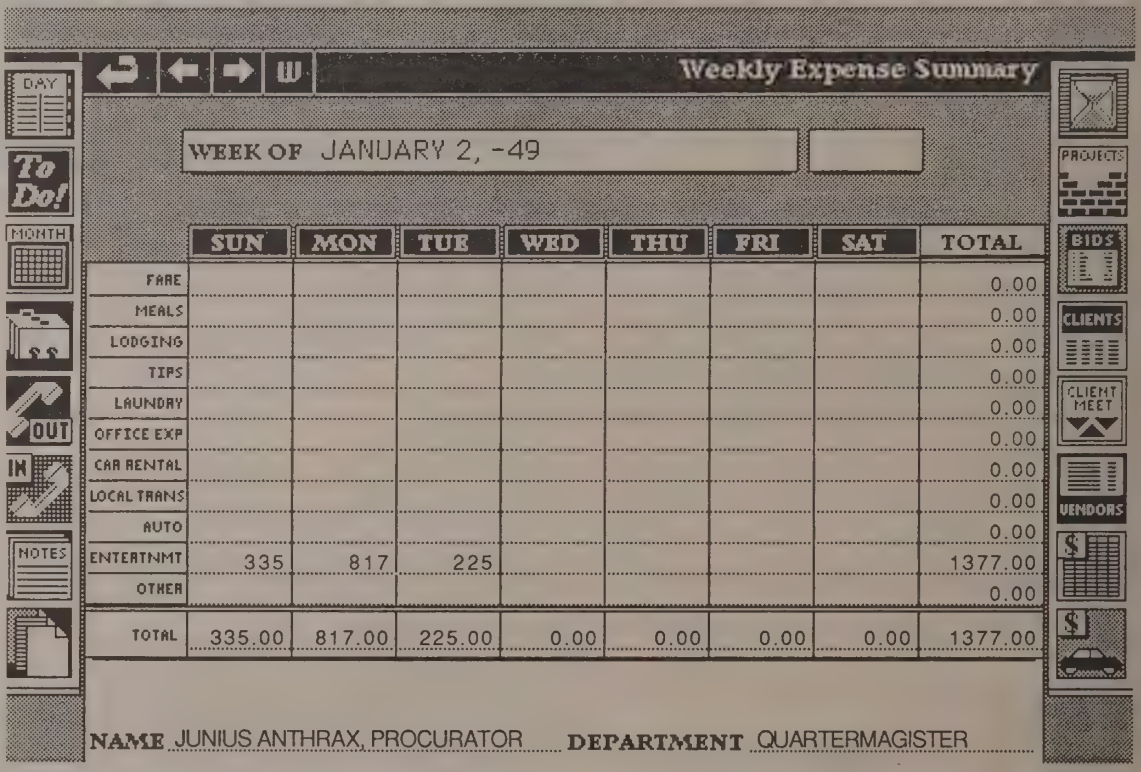
> **Focal Point has cards for proposals and projects; each includes the facilities to calculate what it will cost you to do the job. One quick click, and an accepted proposal is transformed into a project, ready to go without laboriously re-entering the information.**



Vendor Record

Vendor # 500 Vendor Since -50 Last Update 2/29/88 ☑ Active
F.O.B. Terms CASH ☐ Inactive
Company Name TAURUS MAGNUS
Division
Address 1 3 VIA SANGUINARIA
Address 2
City URBS NOVA State GALLIA CISALPINA
Postal Code Country REPUBLICA ROMANA
Main Phone LX-III-CXII
Contact #1 Phone/EXT.
Contact #2 LUCCUS GRACCHUS Phone/EXT.
Contact #3 Phone/EXT.
Billing Rate $ /hour
Source For OXEN
Notes HE ALWAYS WATERS THE OXEN BEFORE HE WEIGHS THEM.

Julius uses Focal Point to track his account with a local merchant.



Weekly Expense Summary

WEEK OF JANUARY 2, -49

	SUN	MON	TUE	WED	THU	FRI	SAT	TOTAL
FARE								0.00
MEALS								0.00
LODGING								0.00
TIPS								0.00
LAUNDRY								0.00
OFFICE EXP								0.00
CAR RENTAL								0.00
LOCAL TRANS								0.00
AUTO								0.00
ENTERTNMT	335	817	225					1377.00
OTHER								0.00
TOTAL	335.00	817.00	225.00	0.00	0.00	0.00	0.00	1377.00

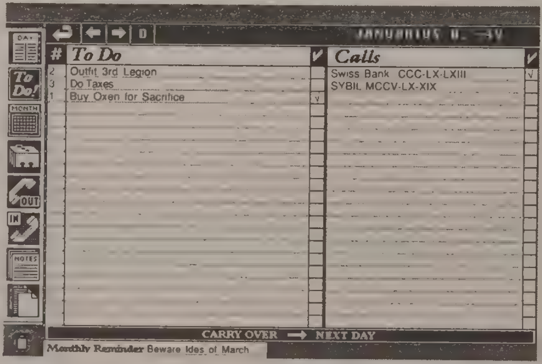
NAME JUNIUS ANTHRAX, PROCURATOR DEPARTMENT QUARTERMAGISTER

track of expenses, but you cannot run a business if you don't. *Focal Point* provides a many-featured tracking system for expenses. It has cards for phone calls — ingoing and outgoing — which include a field to let you charge the time to a project. You can keep all your daily and weekly business expense records in *Focal Point* with little grief. *Focal Point* will make summaries for you weekly.

You can use *Focal Point* to plan. It has cards for proposals and projects; each includes the facilities to calculate what it will cost you to do the job. One quick click, and an accepted proposal is transformed into a project, ready to go without laboriously re-entering the information.

Projects, expenses, invoices — all of this could again overwhelm you with an electronic equivalent of the papers on your desk. But *Focal Point* has a set of interconnecting updates that help to keep things in order. It will make an integrated list of the deadlines of all your projects. It will transfer the totals of your expenses to the master card for a project. Goodman's sometimes complicated scripts go beyond simple linking — they make *Focal Point* an intelligent assistant.

One of the advantages of *Focal Point* is the advantage of *HyperCard* itself — you can jump from one thing to another. In the still-not-very-multitasking Mac environment, this ease of connection is a blessing. It allows you to remember in the middle of a phone call that you want the details of your expenditures. Click on one button, pause a moment, and there you are. In another few clicks, you're back where you were.



#	To Do	✓	Calls	✓
2	Outfit 3rd Legion		Swiss Bank CCC-LX-LXIII	√
3	Do Taxes		SYBIL MCCV-LX-XIX	
1	Buy Oxen for Sacrifice	√		

CARRY OVER → NEXT DAY
Monthly Reminder Beware Ides of March

In the highly interrupted lives we lead, this allows us to jump out of one task, take care of an interruption, and then return without losing our place. *Focal Point* allows us to do that with all the scheduling, planning, phone calls and finances of a small business.

Because Danny Goodman wrote *Focal Point*, you get to see how a master uses *HyperCard*'s script language. None of the scripts is locked, so you can look around to your heart's content. Goodman has the program doing things I didn't know were possible in *HyperTalk*. Read the manual, though — it is complex enough that you can go astray if you don't follow instructions. (*Focal Point*, $99.95. Activision, PO Box 7287, Mountain View, CA 94039 415/960-0410.)

Resource For The Novice HyperTalker

Where do you turn when you want to research programming in *HyperCard*? Programming in HyperTalk ("scripting" in the jargon) is a lot easier than in some languages, but it's still good to have a mentor.

MACazine is a Macintosh journal famous for its critical eye and sharp tongue. It is a magazine to read if you own a Mac and want to sort the good from the bad. It is also full of features by users, and my favorite is Jerry Daniels' "HyperTalking." Daniels has an absolute gift for scripting, and a second gift for explaining the scripting process so that beginners can understand it. If you want to master the *HyperTalk* language with ease and pleasure, get *MACazine* and read his column. (*MACazine*, $21.00 per year PO Box 6815, Syracuse, NY 13217, 800/624-2346.)

Calling All Card Sharks

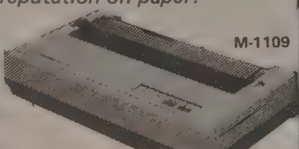
We will be reviewing products for *HyperCard* and other hypermedia in this column monthly, and we invite you to share information about your creations. Commercial products, shareware and public domain software will all be reviewed. If you want us to look at your work, you can send it to the address below. Make sure you include your address, your phone number (and whether you want that number published), and the price of your stack. We are not guaranteeing to publish everything, but we will look at it all.

You can also leave messages, comments, praise and blame for stackware and *HyperCard* on the WELL (415/332-6106; user ID "birrell") or CompuServe (User ID 72466,3567) or by US Mail to Birrell Walsh, 2440 Sixteenth Street, #165, San Francisco, CA 94103. ☐

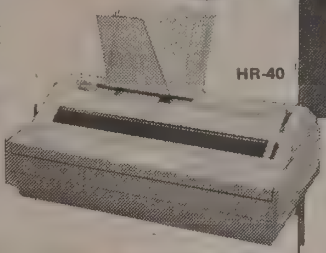
Copyright © 1988 by Birrell Walsh. All rights reserved.

brother Printer Sale!

Brother printers are known for their reliability, performance and versatility. Presented here are a few state-of-the-art printers for your word processing and data processing needs. Let Brother put your reputation on paper!



M-1109 — 100cps, 80 column printer with near letter quality mode. 2K buffer. Compact (13"x2.8"x7.6") & lightweight(7.8 lb.) design. Ideal for use with portable or lap-top computers. Complete with tractor . . .**$219**



NEW! HR-40 — A high speed daisywheel printer that make you look good on paper. 40cps, 136 column. Built in push-type tractor would not waste the first form. Built-in single-sheet feeder makes it the best price-performance daisywheel printer. A unique paper parking feature lets you insert single sheet without removing continuous form. **$599**

M-1509 — Our best seller! 180cps (45 cps NLQ), 136 column. Unique side-mounted cable connection would not tangle form paper and push-type tractor would not waste the first form. Single push button for near letter quality printing. 3K buffer. IBM & Epson compatible. . . **$359**

M-1509
M-1709
M-1724

M-1709 — It has features similar to 1509 but high speed 240cps (50cps NLQ), 136 column, large 24K buffer. Unique push-type tractor and paper parking features. Heavy duty printhead for business use. Quiet . . **$459**

NEW! M-1724 — A truly versatile text and graphic printer with its 24-pin head and 216cps output (72cps NLQ), 136 column. Advanced paper parking feature lets you switch to single sheet without removing the continuous forms. . . . . **$Call**

M-2518 (New!) — A data processing work horse. 18-in, 360cps, can handle 6-part form with its unique straight-thru paper path, plus quto paper thickness adjustment, paper express and paper parking features. Optional color printing. . . . . **$Call**

Twinriter-6

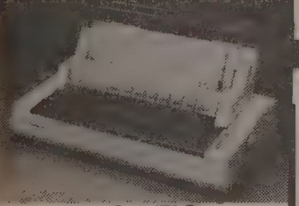
NEW! Twinriter 6 — If you believe 2 heads are better than one, this is it! The dot matrix head creates crisp graphics and prints draft text at 200cps and its daisywheel prints letter quality text at 36cps. Compatible with the new integrated text/graphics software such as Lotus & Framework. **$Call**

LASER PRINTER SALE

H-P LASERJET VER. II — 512K memory, 8 page/minute, 300x300 dot resolution, 6 resident fonts . . . . $ $Call

BROTHER HL-8 LASER PRINTER — 1 MB memory, 8 page/minute, 300x300 dot resolution, 20 resident fonts. 16-character LCD display gives instruction to user, H-P compatible (same Canon engine as H-P) . $ $Call

FORTIS PAGE PRINTER DP800 — 1.5 MB memory, 8 page/minute, 300x300 dot resolution, H-P compatible, new Liquid Crystal Shutter technologywith fewer moving parts, greater reliability and sharper image .$ $Call



FORTIS

Fortis DX-21 — 22cps Daisywheel printer, 1 year warranty . .	.$349
Fortis DX-41 — 40cps Daisywheel printer, 1 year warranty . .	.$589
Fortis DM-1310 Printer, 130cps, 80 column	.$225
Fortis DM-2010T Printer, 200cps, 80 column	.$325
Fortis DM-2015T Printer, 200cps, 132 column	.$399

NEC

NEC 2200, 180cps, 80 col . . .	.$395

OKIDATA

192+ — 200cps, 80 col	.$369
193+ — 200cps, 132 col	.$499
293E — 132 col	.$589
Molule for 293E (paralle/serial) .	$99

STAR GEMINI

SB-10, 24-pin, 80 column	.$375

EPSON

LX-800 — 80 col. w/tractor . .	.$229
FX-86E — 240cps, 80 col . . .	.$329
FX-286E — 240cps, 132 col . .	.$475
LQ-500 — 24-pin, 80 col	.$339
LQ-850 — 24-in, 80 col.	.$539
LQ-1050 — 24-pin, 132 col . .	.$725
LQ-2500 — 24-pin, 324cp . . .	.$925

CITIZEN

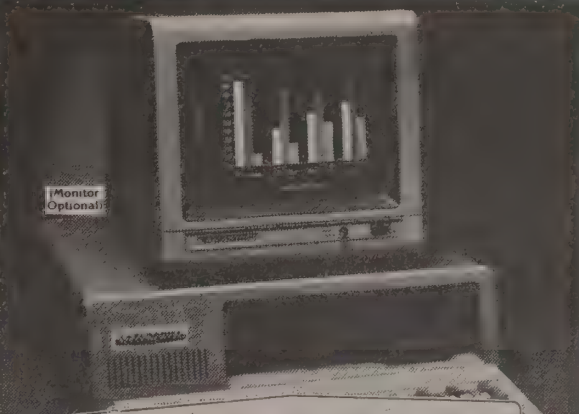
Citizen 120D — 120cps, 80 col	.$159
Citizen 180D — 150cps, 80 col	.$179
Citizen MSP10 — 160cps, 80 col	$279
Citizen MSP15, 160cps,132 col	.$349
Citizen MSP25, 200cps, 132 col	.$419
Citizen MSP55, 250cps, 132 col	.$495
Citizen Premium 35 daisywheel	.$455
Citizen Tribute 224, 24-pin . .	.$625

TOSHIBA

Toshiba P321-SL — 24-pin . . .	.$499
Toshiba P341-SL — 24-pin. . .	.$689
Toshiba P351SX — 360cps. . .	.$995

PANASONIC

Panasonic KX-P1091i — 192cps	.$249
Panasonic KX-P1092i — 240cps	.$345
Panasonic KX-P1592 — 180cps	.$459
Panasonic KX-P1595 — 240cps	.$499
Panasonic KX-P3151 — 22cps .	.$389



ENTERPRISE

ENTERPRISE XT-TURBO

- Fully IBM PC/XT compatible
- 640K on mother board
- 8 expansion slots
- 84-key keyboard with LED's
- 150-watt power supply
- Keyboard speed selectable from 4.77 MHz to Turbo speed
- Full one-year warranty
- Parallel printer port included
- Serial port included
- Game port included
- Clock/calendar w/battery backup
- Compatible w/EGA, CAD CAM, and networking systems

	640K memory 1-360K drive	2-360K and 20-MB Drives	2-360K and 30-MB drives	2-360K and 40-MB drives
8MHz	$549	$909	$939	$1109
10MHz	$559	$919	$949	$1119

Monitor Optional

ENTERPRISE 286

- Fully IBM AT compatible
- 512K memory — expandable to 1-MB
- Controller for floppy & hard disks
- 1.2-MB floppy drive
- 101-key enhanced keyboard w/LED's
- Keyboard speed selectable
- 200-watt power supply
- 8 expansion slots
- Clock/calendar with battery
- Full 1-year warranty

	512K memory 1 floppy drive	512K memory 2 floppy drives	2 floppy and 40-MB drives	2 floppy and 72-MB drives
12MHz	$925	$995	$1495	$1695

OPC
monitor optional

OPC-286 SYSTEM

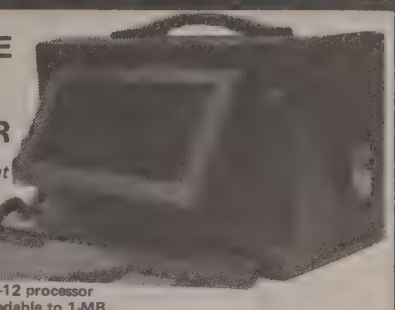
Introducing the OPC-286. A computer system built for business use and designed with future expansion in mind.

- 6/8 MHz clock speed, software slectable
- 512K memory, expandable to 1-MB on mother board
- 12 expansion slots (8 16-bit, 8 8-bit)
- 238watt industrial grade power supply
- 1.2-MB floppy drive
- Western Digital hard disk/floppy controller
- Front access to 4 half height drives
- 1 year warranty by 70 service centers

512K & 1 drive	512K & 2 drives	2 drives & 40--MB	2 drives & 72-MB
$875	$945	$1445	$1645

PORTABLE 286 COMPUTER

Compact & lightweight
Weighs approx. 20 lb.

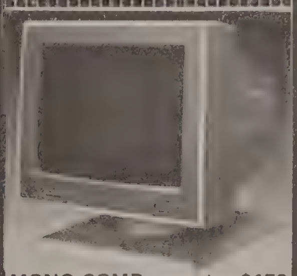


- 12-MHz, Intel 80286-12 processor
- 640K memory, expandable to 1-MB
- 80x25-line back-lit LCD screen w/reverse video switch
- 1.2-MB floppy drive
- RGB color port for external color monitor
- Auto sensing 110/220 VAC power supply
- Full featured keyboard w/12 function keys
- 5 expansion slots
- parallel & serial ports included

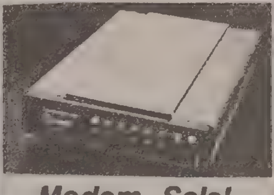
with 20-MB hard disk . .	$1,795
with 40-MB hard disk . .	$1,995

LAP-TOP COMPUTERS

Toshiba T1000, 512K, 1drive .	.$825
Toshiba T1100, 2 drives . . .	$1,495
Toshiba T1200, 1 dr.,20-MB.	$2,295
Toshiba T3100-20, 1 dir.20MB$	$Call
NEC Multispeed EL 2 drives.	$1,595
NEC Multispeed EL,1dr. 20MB	$2325
Datavue Spark Laptop, 640K, 2 drive with back light screen . .	.$1,275



MONO COMB...*complete*	$150
RGB COMBO....*complete*	$300
EGA COMBO...*complete*	$500
NEC 1402 Multisyn-2 monitor .	$599
Samsung SM200 Amber w/base .	$99
Samsung 14" RGB Color w/base	$275
Samsung 14" EGA Color.	$385
Sony FV1311 RGB & TV	$469
Sony SPD1302 Multisyn Color .	$599
Sony SPD1303 Multisyn Color .	$629
Taxan 765 14" EGA Color . . .	$385
Taxan 770 Multisyn Color	$499
TVM MD-7F 14" EGA Color . .	$395
TVM MD-11 14" Multisyn color	$495
TVM MM-11 14" Multisyn B/W.	$195
Thompson 14" RGB Color . . .	$289
Thompson 14" Multisyn color .	$545



Modem Sale!

Everex 1200 internal	$99
Everex 2400 internal	$195
Everex 2400 external.	$225
Hayes 1200 external	$329
Hayes 1200B internal w/Scom	$329
Hayes 2400 external	$485
Hayes 2400B internal w/Scom	$485

ADD-ON CARDS

Hi-speed Monographics w/par .	$75
Hi-speed Color card w)par.port	$75
Multi I/O & floppy controller .	$75
Four-Mode EGA Card	$125
Par./serial/clock card for XT. .	$69
Parallel/serial I/O card for AT .	$65
RS-232 serial card.	$29
Parallel printer card.	$25
Multifunction memoryw/0K. .	$125
Hercules color card w/par.port	$155
Hercules Graphics-Plus	$185
Hercules In-Color card	$299
Intel Above board.	$379
Genoa Level 7 EGA/VGA card	$199
Vega Deluxe EGA/VGA card .	$235

Western Digital WA2 Controller

$115

HARD DISK SALE!

Seagate 225, 20-MB w/W.D. controller.	.$269
Seagate 238, 30-MB w/W.D. controller.	.$329
Seagate 251, 40-MB hard disk only	.$399
Miniscribe 3650, 40-MB half height.	.$325
Micropolis 72-MB hard disk, 27 ms . . *Special Sale*	$699

TOWER CASE

The finest tower case you can buy! Will accommodate PC/XT, AT, mini AT and 386 motherboards. Easy to open with only two screws.

- LED lights for power, hard disk, and turbo speed indications
- Up-front on/off switch
- Reset switch and Turbo switch
- Key lock
- Two 3½" slots for 3½" floppy or hard disk drives, two 5¼" slots for floppy drive or tape backup, plus one 5¼" slot for full ht. hard disk
- Same dimensions as IBM PS/2 60/80
- 6 port holes for parallel/RS-232 or networking connectors
- 275-watt heavy duty power supply with auto sensing 110/220 volt AC
- Quiet AC fan
- Unique folding legs

$275

All goods are brand new and guaranteed. All advertised prices already include a 2% cash discount for full payment by cashier's check, money order or cash. Personal or company checks must clear 3 weeks before we ship. Add 2% for credit card purchases. COD's are accepted for UPS shipments only and require 20% paid deposit and $3 COD fee. No COD's to Canada, Puerto Rico, FPO/APO or P.O. Boxes. Shipping & insurance charges by UPS Ground: $5 (card/modem/drive/software), $10 (monitor/printer), $15 (computer/plotter), $25 (laser printer/UPS/copier). UPS Blue: 3X Ground. UPS Red: 4X Ground. P.O.'s accepted from government agencies, Fortune 1000 firms and major institutions. Calif. buyers add sales tax. Prices subject to quantity available, correction or change without notice. You may call for the latest prices.

EASTERN ENTERPRISES, INC.
Mass Merchandising Since 1969
6001 BANDINI BLVD., LOS ANGELES, CA 90040
COME VISIT OUR GIGANTIC SHOWROOM & STORE

TOLL-FREE (ORDERS ONLY) **(800)392-7081**
Hours: Monday to Friday 8:30am — 5:00pm Pacific Time
Calif., Alaska & all info *Call* (213)725-3080
FAX: (818)992-0990

ATARI ST

A Command Line Interpreter For The ST

By David Hawkins

There are times when the fastest way to do a job doesn't involve pointing, clicking, or scrolling. It involves typing. If you want a file that's off in a subdirectory (folder) somewhere, you might not want to go to the trouble of opening and closing several windows to get to it — you just need to type in the filename. But the Atari operating system doesn't have a way for you to type in commands. That's when you need a command line interpreter.

A Command Line Interpreter?

A command line interpreter is a program that gives you a prompt, and then takes your typed line and does something with it. Since most people who do much typing don't type any more than they have to, they tend to use interpreters that take short (cryptic) commands.

And That Means...

Yes, for short, cryptic commands there's nothing like UNIX. There are several command line interpreters for the ST that look like UNIX. One of them is free and is available on some local bulletin boards. It's called *gulam* and it was written by P. Mateti. "Gulam" is an Indian word for "obedient servant."

But That Also Means...

But a command line interpreter can also have a lot of power because it copies UNIX. *Gulam* allows you to write shell scripts, or lists of commands, that it can interpret. I'll give an example after covering some of the commands.

The Commands

The box shows some of the 62 built-in commands that *Gulam* can interpret. Most are standard UNIX commands, and there are a few that are particular to the Atari. For example, the "mson" and "msoff" commands turn the mouse on and off. There may be times when you don't want the mouse to be shown.

The most basic command is **ls.** It provides a listing of files. **ls -l** shows the date of the file, as well as its name and size. The "-l" is an option.

The commands for viewing files are "cat" and "more" — where "cat" provides a continuous display, while "more" pauses every screenful for you to hit the spacebar to continue.

> **If you want a file that's off in a folder somewhere, you might not want to open and close several windows to get to it — you just need to type in the filename. But the Atari operating system doesn't have a way for you to type in commands. That's when you need a command line interpreter.**

The editor is "ue" which stands for micro-emacs. That means it's a smaller implementation of Emacs, a standard UNIX editor. It is not a word processor, but is good enough for creating plain text files. It allows you to use the mouse to move around in the file.

Other Handy Commands

cp file1 file2	copies file1 to file2
te	is a vt52 terminal emulator
sx file	sends a file to another computer using xmodem
rx file	receives a file using xmodem protocol
rm file	removes the file from the disk
rmdir directory	removes the directory (folder) from the disk
mv file1 file2	renames file1 to file2
gem	allows you to run a GEM program
grep string file	searches a file for a group of characters.

You can use "grep" to find what words you've used in various files. For example, when I wanted to find what "gulam" meant I typed

```
grep gulam gulam.doc
```

and it showed me where each usage of "gulam" was in the documentation.

Redirection

What's redirection? Well, normally when you run a program it displays the output on your screen. Redirection allows you to send the results of a program elsewhere — like to the printer or a file. For example, if you wanted to keep track of the files on a disk, *Gulam* would allow you to type

```
ls -l b: › filelist
```

and a list of the files on drive B would be placed in the file called filelist. Likewise, if I wanted a record of where the word "gulam" was used in the documentation I'd type

```
grep gulam gulam.doc › gulam.use
```

and each line with the word "gulam" would be placed in a file called "gulam.use".

Command Files

Suppose you have a set of commands that you run over and over. *Gulam* allows you to automate the process. You can create a file that will include those commands. For example, suppose at the end of the month you want to remove all backup copies of files — files that end in .BAK, and then create a list of the files on a disk and store that list. The following list of commands in a file would do that for you:

```
rm a:\*.bak
date › filelist
ls -l » filelist
```

The first line removes the backup files. The second line stores today's date in the filelist file. The third adds the list of files to the file.

This example was simple, but *Gulam* allows you to make very complex command files. It includes commands like "if," "foreach," "while," "endif," and "endfor" that can be used with the other *Gulam* commands to do regular work.

Who Are You?

Another feature of UNIX's C shell is aliasing. This allows you to rename commands and add options to them. *Gulam* allows you to do this with the alias command. If you wanted to always get the long listing from "ls," then you could create an alias called "ll" by putting the following in *Gulam*'s startup file.

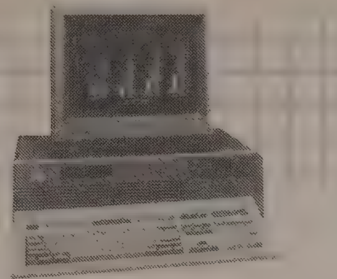
```
alias ll 'ls -l'
```

and then you could just type "ll" to get the long listing.

These are the 62 built-in commands for Gulam:

```
alias  dm  endwhile help  more  printenv set  ue
cat  dirc  exit  history mson  pushd  setenv  unalias
cd  dirs  fg  if  msoff  pwd  source  unset
chmod  echo  fgrep  kb  mv  rehash  sx  unsetenv
copy  egrep  foreach  lpr  peekw  ren  te  which
cp  ef  format  ls  pokew  rm  teexit  while
date  endfor  gem  mem  popd  rmdir  time
df  endif  grep  mkdir  print  rx  touch
```

David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He can also be reached as David Hawkins on the Guild (415/771-7062). He has one of the first Atari ST 1040s sold in San Francisco, both monitors, an Okimate 20 color printer, and disks all over the room.



We Make It EASY For You To Get The BEST SYSTEMS at AFFORDABLE PRICES !!

EXCEL 386

- Intel 80386-16 CPU, DTK 386 BIOS
- DTK 8/16 MHz Main Board
- 1M RAM on board, exp. to 15M
- 2 Serial Ports, 1 Parallel Port
- 1.2M Floppy Drive
- 40 MB Hard Disk (ST-251)
- NCL HDD/FDD Controller
- EGA Card w/CTX EGA Monitor
- 220 Watt Power Supply
- AT Full size case w/LEDs, Reset, Lock
- Maxi-switch 101 Enhanced Keyboard
- Real Time Calendar/Clock
- 48 Hr. Burn in test
- 80387 Math co-processor socket
- ONE YEAR LIMITED WARRANTY

$2895

AT 12 MHz System

- DTK 6/12 MHz Main Board
- Intel 80286-12 CPU
- DTK/ERSO or Phoenix BIOS
- 220 Watt Power Supply
- 512K RAM on board (80 ns)
- 360K Floppy Drive
- Floppy Disk Controller
- Hercules compatible graphics
- Parallel printer port
- Hi-res mono TTL monitor
- AT Style 84-key keyboard
- AT Enhanced Full size case
- (3 LEDs, turbo and reset, lock)

$899

Monthly Specials

XT 10MHz BARE BONE W/256K	$225	MOUSE	72
AT 10MHz BARE BONE W/512K	450	MODEM (1200 BAUD)	72
150 WATT POWER SUPPLY	39	MODEM (2400 BAUD)	145
220 WATT POWER SUPPLY	65	EXTERNAL 1200/2400	125/175
AT/XT CASE	35	JOYSTICK	15
AT CASE	60	PRINTER CABLE	8
84-KEY KEYBOARD	35	SERIAL CABLE	8
101 ENHANCED KEYBOARD	50	AB SWITCH	25
MAXI 101 ENH. KEYBOARD	69	SURGE PROTECTOR	10
GAME CARD	16	PANASONIC 1080i (II)	195
PRINTER CARD	16	PANASONIC 1091i (II)	205
RS232C	21	RAM CHIPS	CALL
4-SERIAL CARD	75	HARD DISK	CALL
2.5M RAM CARD (AT)	70	FDC (2 PORT)	18
2M EMS CARD (XT)	69	FDC (4 PORT)	28
576K RAM CARD (XT)	27	COMPUTER STAND	15
DISK I/O CARD (XT)	55	PUBLIC DOMAIN PROGRAMS	3
MULTI I/O CARD (AT)	45		

10 MHz XT Turbo System

DTK 4.77/10 MHz M.B.; 150 W P.S.; 360K FDD w/FDC; 256K RAM; MGPA; AT style keyboard; Hi-res mono mon.; swivel; AT/XT slide in case

$475

10 MHz AT Turbo System

DTK 6/10 MHz M.B.; 200 W P.S.; 512K RAM; 360K FDD; FDC; MGPA; AT 84-key keyboard; AT case w/LEDs, reset, lock; Hi res mono monitor w/swivel

$799

EXCEL
COMPUTER, INC.
4124 Rosemead Blvd., #A
Rosemead, CA 91770
(818) 309-9986

P. C. HOME
Skypark Circle
Irvine, CA 92714
(714) 261-8730

Are you looking for reasonable prices, but still want reputable service?

HEWLETT PACKARD

DeskJet	699
ScanJet	1395
PaintJet	1050
Toner	89
Plotter 7475A	1310
ThinkJet	359

EPSON

LQ800 w/tractor	295
LQ850/1050	525/699
LQ500/2500	349/499
EX800/1000	440/449
FX86E/286E	310/459

COMPAQ

DeskPro 386 40/70	4275
DeskPro 286 20/40	2295/2495
Portable 386 40/100	5495/6995
Monitors	CALL

IBM
Authorized Dealer
Personal Computers

PS II Mod 25	
Mono/Color	990/1260
PS II Mod 30 2	
Dr/20MB	1199/1610
PS II Mod 50 021	2575
PS II Mod 60 40/70	3125/3850
Mono Monitor	185
Color 8512	425
ProPrinter II/XL	370/540
ProPrinter X24/XL24	545/690

SOFTWARE

PageMaker	435
Ventura	425
Lotus 1,2,3	299
Word Perfect	219
MS-DOS	85
dBase III +	410

MICROTIMES READERS

THIS MONTH ONLY
LaserJet II
ONLY $1575 WT/C

AST & APPLE

BEST PRICES

PC XT 4.7, 8 MHz, COMPLETE 895

PC AT 12 MHz, COMPLETE 1295

Serial, parallel, clock, calculator, 640K, 1 floppy, 20MB, monitor, extended keyboard

COMPUTER BUSINESS CENTER
2811 Ocean Park Santa Monica, CA 90405
(213) 452-2027

AMIGA

The ARP Project: Improving The Amiga's Operating Environment

By Matthew Leeds

There is a conspiracy afoot. A not-so-secret group wants to replace AmigaDOS with their own operating system.

The ARP project is part of a larger plan to improve the Amiga's operating system, to create a consistent user interface for all applications, to insure that AmigaDOS is maintainable by programmers without access to BCPL development tools (the Amiga's operating system was created using a language called BCPL), to reduce the amount of disk space required by AmigaDOS, and to give users more power over their Amiga.

The current AmigaDOS commands in the C: directory have several drawbacks. They have an inconsistent user interface. Some commands accept wildcards, some accept ten filenames as arguments, other accept 20. They also take up quite a bit of disk space. Several have undesirable side effects, such as the Copy command not preserving the date/time stamp on a file.

For all of you who have used other computers, AmigaDOS's strange wildcards have been a source of frustration. The ARP project implements the * as a wildcard character, and also lets you use the UNIX style to state a set of characters to match.

> **The ARP.library offers an easy to access set of routines that can be shared by applications, and the beginnings of a consistent user interface for the Amiga.**

An integral part of the ARP project is the ARP.library. This is the support library for all of the ARP commands. It also offers many commonly used functions for use by developers. The library provides functions for command line parsing, file requests, wildcard pattern matching, resource tracking, and formatted printing. The entire library is written in assembly language, and is about 10K in size.

For Amiga users the ARP.library is simple to use. Just copy it to the LIBS: directory on your Workbench disk and forget about it. For programmers, it offers a easy to access set of routines that can be shared by applications, and the beginnings of a consistent user interface for the Amiga.

The current list of C: replacement commands includes:

AddBuffers
Assign
CD
Delete
Echo
EndIf
FileNote
Info
Join
List
Path
Protect
Relabel
Search
SetDate
Sort
Status
Wait
Break
ChangeTaskPri
DiskChange
Else
FailAt
If
Input
Lab
MakeDir
Prompt
Quit
Rename
Set
Skip
Stack
Type

These commands are copied to the C: directory to replace the current commands. The current release of the ARP commands is 25K smaller than the commands it replaces, so even with the addition of the ARP.library to your Workbench disk, you save about 15K of disk space. The new ARP commands offer extended functionality, ease of use, and a consistent user interface; they often execute faster than the original AmigaDOS commands.

You can get a copy of the ARP project from a variety of sources. Arced versions can be found on many BBSes; most Amiga user groups keep a copy in their public domain library; several disk-based Amiga magazines have included it in recent issues, or you can order a copy direct from: ARP Support, c/o Microsmiths Inc, POB 561, Cambridge, MA 02140. All of the programs currently in the ARP project are freely distributable, and all are accompanied by excellent documentation on disk.

In Other News...

The long awaited and much heralded *Return To Atlantis* has finally shipped from Electronic Arts. Over three years in development, *RTA* is a role-playing game which, when first announced, promised to bring in a new age of animated graphics and digitized sounds in games. Although the graphics are no longer at the cutting edge of Amiga game imagery, the core of the game is a fascinating look at intrigue and adventure in high-tech surroundings.

Commodore released its financial results for the quarter ending December '87, and the numbers look good. CBM posted a $27.7 million income on a $281.7 million of revenue. This is a 27% increase over a year ago, with the Amiga accounting for 40% of the total revenue. Commodore is claiming an installed base of over 500,000 Amigas.

If you own an A500 or an A2000, you do not have a color composite video output on your Amiga. If you plan on recording your Amiga's graphics on a VCR you will need a video encoder. If you don't need broadcast quality output, an excellent choice for a video encoder is produced by Creative Microsystems. The V-1 is offered in two basic models for the A500 (an external box) and the A2000 (an internal board). Each A500 version connects to the RGB port, and one provides composite video output, and separate chroma and luminance output. The other A500 version also offers RF output. If your VCR will not accept video input you may need this version.

The A2000 versions offer the same options. The A500 versions do not offer a passthrough of the RGB port. I don't recommend using the A500 version on an A2000, as you will not be able to connect anything to the parallel port of the A2000 while the encoder is connected to the RGB port. Get the board version for the A2000.

If you haven't yet gotten a copy of the shareware program *POPCli*, run out to your nearest user group or log onto your favorite BBS and get a copy. It is an essential part of my operating environment. The program's actions are simple: it lets you open a CLI at any time just by pressing two keys on your keyboard. Think of all the times you wanted to check a disk directory, start a CLI-only program, or use a CLI command while you were using some other program that wouldn't let you start a CLI easily.

There are other programs out now that will let you start up a CLI from the keyboard. But *POPCli* is one of the easiest to use, and it offers the additional benefit of including a screen blanker that will keep your monitor from burning an image into the phosphors should you walk away from your Amiga without turning the monitor off.

Along with *POPCli* make sure you get a copy of Runback. This program will let you run CLI-only programs and then close the CLI window you started the program from. No point in cluttering up your screen with errant CLI windows.

Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics and related fields. He currently works for Infinity Software.

At COMPUTEL, We GUARANTEE to SAVE YOU MONEY!!

Complete AT

$988

6/10 MHz Motherboard
1.2 MEG Floppy Disk
FDD/HDD Controller
640K RAM
Case
200 W Power Supply
Samsung 1252G Monitor
Mono/printer card
Keyboard

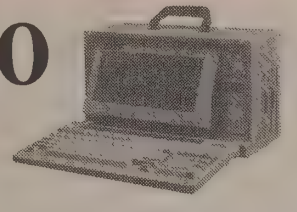
Upgrades:

20 MB Hard Disk . . add '240
40 MB Hard Disk. . . add 335
720K Floppy . . . . add 99
CGA Color . . . add 185
EGA Color. . . add 395

12 MHz 0 Wait State Available - CALL

LCD SYSTEM

$1650



6/12 MHz Motherboard
640K RAM
1.2 MEG Floppy Disk Drive
20 MB Hard Disk Drive
FDD/HDD Controller
200 Watt Power Supply
Built in 9" LCD screen
Built in keyboard
Case

10 MHz XT Turbo

$899

(w/ 20 MB Hard Disk)

4.77/10 MHz Motherboard
640K RAM
AT Jr. case (3 LEDs, reset, lock)
150 W Power Supply
One 360K Floppy Drive
20 MB Hard Disk
Mono graphic card
Parallel port
TTL Hi-res monitor
AT Style Keyboard

SPECIALS OF THE MONTH

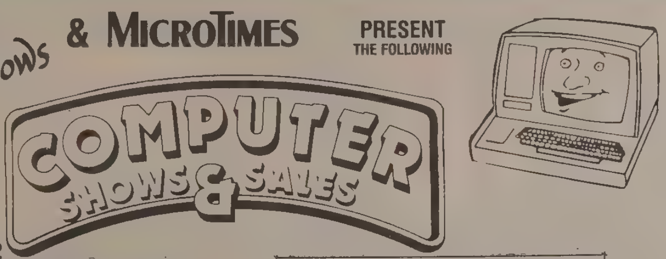
Enhanced 101 Keyboard (Keytronic) **$48**
200 Watt Power Supply **$55**
2 MB EMS Card for AT/XT **$65**

COMPUTEL, INC.

14145 Proctor Ave., City of Industry, CA 91746 (818) 369-2626

All systems come with a limited one year warranty. Dealers: call for quantity pricing.

GOLDEN GATE SHOWS & MICROTIMES PRESENT THE FOLLOWING



Saturday 4/2
San Diego Computer Show & Sale
San Diego Scottish Rite Center
I-8 to Mission Center/Texas St. exit,
left on Camino del Rio South

Saturday 4/16
Ventura Computer Show & Sale
Ventura County Fairgrounds
(Going N. exit California St. off Hwy 101
Going S. exit Ventura Ave. off Hwy 101)

Coming May 14 & 15
Amiga-Commodore Computer Users Show & Sale
at the
Santa Clara Convention Center.
Call for details!

TREMENDOUS SAVINGS

☎ **GOLDEN GATE SHOWS**
CALL FOR INFO: (415) 388-8893

ALL SHOWS 10-5PM
Admission $5.00
Kids 12 & under FREE

HOT SOFTWARE

$2 PER DISK — IBM PC COMPATIBLE — $2 PER DISK

Send $1 for 200+ Disk Catalog On Disk! $1 Shipping Per 5 Disks + .07 Tax

E001	PC-Write 2.71 With Spell Check (2)
E003	PC-Outline 3.3 Memory-Resident
S001	ASEASY Vers 3.0 1-2-3 Clone
D007	Q Filer 3.0D-Great DOS Shell
DB003	Dbase3 Tools-Code Analyzer +
U010	Great Mail List Manager-Mass Appeal
B005	Still River Shell V, 2.24
B002	EZ Forms Generator
B007	Pro Masterkey Utils-Unerase, Unformat, More
E010	Word Perfect Macro Editor/145 Macros (2)
P006	Print Shop Clone
D001	Dos Tutor
LC024	Turbo C Tutor (2)
LC025	Turbo C Debugger
M001	ProComm 2.42 (2) Comm Program
E009	Homebase 2.0 Sidekick + (2)
U001	PC Mag 100+ Utils (2)
B011	Hard Disk Menu II-Tops Automenu
P004	City Desk 6.0 Dot matrix Desk Top Pub
LC018	Great "C" Tutor (2)
P005	LQ Print-New Version 2.26 Letter Quality with 17 Fonts on Dot Matrix

GENERIC COMPUTER SYSTEMS
22612 FOOTHILL BLVD., SUITE 200C, HAYWARD, CA 94541 415-581-1494
Walk-in Hours 9-7 Mon-Wed-Thur-Fri

FUJITSU

DX 2300/2400 and DL 3300/3400

DX 2300/2400

- 324 cps draft - 54 cps NLQ
- 80 column or 136 column
- Epson FX-80, IBM ProPrinter and IBM Graphics emulation
- Friction feed and adjustable tractor feed
- Quiet (less than 55dBA)
- Parallel and serial (optional) interface
- Color option available
- MTBF - 6000 power-on hours

Call for Price

DL 3300/3400

- 24-wire dot matrix
- 240 cps draft - 60 cps letter quality
- MTBF-8000 power-on hours
- IBM ProPrinter, IBM Graphics, Diablo 630 & Epson JX-80 emulation
- Parallel and serial (optional) interface
- Narrow or wide carriage
- Adjustable tractor and friction feed
- Head life 300 million strokes per wire

Call for Price

Cypress Distributing Company®

560 Lincoln Avenue
San Jose, CA 95126
(408) 297-9800

22186 Rim Pointe
El Torro, CA 92630
(714) 770-7244

2670 Truxel Road
Sacramento, CA 95833
(916) 646-1955

Quimax Emerson Century Data Systems Packard Bell
Personal Computer Products Panasonic Seikosha C. Itoh
Moniterm Star Micronics Mitsubishi Rutishauser Canon

APPLE II

Thanks For The Memories...

By Mike Markowitz

Apple released the IIGS with only 256K of RAM on the motherboard. For classic 8-bit applications, including *AppleWorks*, this is ample space, but for the new ProDOS 16 environment it is no space at all. The heart of the IIGS is the 65C816 microprocessor chip, which has a 24-bit address bus. Two to the 24 power is 16,777,216, (I just worked it out on the *AppleWorks* spreadsheet) so the potential "address space" of the IIGS is a monstrous 16 megabytes. The present hardware supports about half this amount; Apple only provided the decoding circuitry for eight megabytes. The IIGS motherboard has a special 44-pin "auxiliary" slot for memory expansion.

The IIGS doesn't have the definitive version of its 16-bit operating system yet, but almost all the new applications that exploit its special features require 512K minimum, right out of the box. *Deluxe Paint II* for the IIGS from Electronics Arts requires 768K, and *Paintworks Gold*, recently announced by Activision, will require 1.25 MB! Some recent IIGS programs have been designed to run on 512K, but "recommend" one megabyte if you want to use all the fancy features at once. A "RAM disk" simulating a 3.5" disk drive could require 800K more.

The Apple IIGS Memory Expansion Card

Apple released a basic one-megabyte RAM card along with the introduction of the IIGS. Other card makers have added bells and whistles to their IIGS memory cards to differentiate their products and attract market share.

For most IIGS buyers, price and convenience will be the great selling points for the Apple card. With a list price of $129, the card carried a $50 Apple rebate at this writing, and some dealers were throwing in an additional discount, along with free installation. The card uses standard 256K chips; one bank is filled, and there are three banks of empty sockets. The card has no included software, but it comes with good documentation.

MDIdeas OCTORAM

OCTORAM is the Mack Truck of IIGS memory expansion—a heavy-duty brute with tremendous capacity. When combined with its daughterboard, the OCTORAM ESP, it becomes the Lamborghini as well, with amazing acceleration from a standing start. As you might expect, all this power has a price.

OCTORAM uses memory chips in an unusual form, called SIMM's (single in-line memory modules), which have become standard in the Macintosh world, but are something new to Apple II. SIMM's are strips of eight 256K or one-megabyte DRAM chips mounted on a small circuit board. The OCTORAM board has snap-in slots for eight SIMMs. The SIMMs are set at an angle, so the card does not physically interfere with the neighboring slot inside your IIGS. You cannot mix 256K and 1 MB SIMMs on the same board.

A set of jumper blocks on the board must be properly configured to tell the system how much memory is installed. The board is shipped without any diagnostic software, and documentation is limited to a two-page leaflet.

With 256K installed, the OCTORAM lists for $149.95. Fully populated with 256K SIMMs (to a total of two megabytes on board) the price is $599.95. MDIdeas' list price for the one-megabyte SIMMs is a whopping $350 each. At this rate, a maxed-out 8 MB card would cost $2950! At this writing, some Macintosh memory dealers were advertising 1 MB SIMMs for $199 each, however.

At this time, no known Apple IIGS application requires more than 1.25 MB to run. It is hard to imagine any application for the computer that would use 4, let alone 8 MB of RAM, but future increases in the processor speed of the GS, and the possibility of *HyperCard* stacks and CD-ROM based applications may radically alter this situation over the next two years . . .

In this sense, the OCTORAM is an investment in the future. The OCTORAM ESP, on the other hand, is something very immediately useful. The ESP is a battery-backed static RAM board that plugs into the OCTORAM. Static RAM chips, unlike the cheaper dynamic RAM, draw very little power while storing information. The battery on the card will maintain data for six months with the computer turned off. The battery recharges itself when the computer is powered on, so in normal use it could last up to ten years.

The ESP board is sold in two configurations, 128K (for $180) and 512K (for $390). The 128K board can be upgraded in 64K increments, which list for $35 each. These are low-power 32K × 8 Static RAM chips rated at 120 ns or faster. These chips are extremely static-sensitive (i.e. they can be destroyed by the stray electrical charges that build up on your fingers), so many users will prefer to have them factory-installed, or handled by a dealer.

The ESP board has two jumpers. A "write protect" jumper can be removed if you want to make it impossible to erase the data stored on the card. A "power" jumper interrupts the circuit to the battery (which erases the static RAM chips). The "power" jumper is normally used only when adding or removing chips.

The IIGS treats the ESP's Static RAM as a ROM disk. A special software utility on a 3.5" disk is provided to set up this ROM Disk. A minimal 128K ROM Disk can include ProDOS 8, BASIC. SYSTEM, and the system utilities. A 192K ROM Disk will hold the *AppleWorks* Startup and Program disks. With 512K you can have the full ProDOS 16 Desktop. If you set ROM Disk as your startup device, you can boot directly into your application before the computer monitor has even warmed up. It is a remarkable feeling of power.

For most users, the most serious drawback to the OCTORAM ESP is that it blocks Slot #7 when it is installed. This is often the only free slot a GS user has. Another potential drawback is that you may not always want to boot up directly into *AppleWorks*, or the Desktop, or whatever you have stored on "ROMDisk." If you occasionally want to run DOS 3.3 applications, for example, you would have to go into the Control Panel, change your startup slot, and reboot the Computer. You could also exit to BASIC and start up from the] prompt. This sort of thing ought to be covered in documentation, but MDIdeas provides very little documentation with the card. The product is really aimed at expert users, who are willing to experiment a bit.

MDIdeas is also working on an accelerator board for the IIGS. Called the GSX, it will run at 5.6 Megahertz, with intermediate speeds at 2.8 and 1.0 Megahertz. Eric Wong, VP of Marketing at MDIdeas, describes it as "a very complex board" that will have its own fast RAM, expandable to 1 megabyte. It will be "completely transparent to all software" and will be invoked and controlled by a Desk Accessory. Price and availability were unknown at this writing.

Applied Engineering, the market leader in Apple II expansion products is reportedly working on a IIGS accelerator, but would not comment on future products. It would not be surprising, however, if several IIGS accelerator products showed up at the AppleFest show in Boston in May.

Plugging Away

What, you don't belong to a user group yet? Let me recommend the Big Red Apple Club (423 Norfolk Avenue, Norfolk, Nebraska 68701 (402) 379-4680). These folksy Midwesterners publish a sharp little monthly journal, *Scarlett*. They have a good public domain library and mail-order discounts on software and peripherals. Membership is just $12 a year.

In the neighboring Plains state of Kansas, you find Tom Weishaar's *Open-Apple* (PO Box 7651, Overland Park, Kansas 66207). Something about the prairie environment must promote clear thinking, because this 8-page monthly newsletter contains some of the shrewdest technical insight in the world of Apple II computing. Check it out for $24 a year. ☐

RESOURCES

MDIdeas
1163 Triton Drive
Foster City, CA 94404
(415) 573-0580

Applied Engineering
PO Box 798
Carrollton, TX 75006
(214) 241-6060

Mike Markowitz is a computer engineer for a large Southern California aerospace firm. He has been writing about Apple II hardware and software since 1984. Copyright © 1988 by Mike Markowitz.

BUY A MEGA, GET A PRINTER

ATARI
Power Without the Price™

THE ATARI MEGA COMPUTER.
THE BETTER BUSINESS DEAL.

NOW, THRU THE END OF THE MONTH, YOU CAN GET A FREE PRINTER, A \$300 VALUE, when you purchase a MEGA 2 or MEGA 4 Computer by Atari, from **LOGICAL CHOICE FOR COMPUTING.**

The MEGA 2 or MEGA 4
Includes:
2 or 4 MB Memory
Mouse
RGB Color Monitor
Built in clock
External Keyboard

520 ST
Personal Computer System
The Affordable Powerhouse
Includes:
512K RAM
Internal 3.5" Disk Drive
Mouse
RGB Color Monitor
FREE 3 hour HANDS ON Beginner's Class

\$829^{95}
COLOR SYSTEM
\$999^{95}
w/ SMM-804 Printer & cable

25% OFF
retail price of all domestic ST games
examples:
Dungeonmaster reg. \$39.95
OUR PRICE \$29^{95}
Gunship reg \$49.95
OUR PRICE \$37^{95}
Flite Simulator II reg. \$49.95
OUR PRICE \$37^{95}

15% OFF
retail price of imported ST games
examples:
Star Wars (Eng.) reg. \$39.95
OUR PRICE \$33^{95}
Trivial Pursuit reg. \$39.95
OUR PRICE \$33^{95}
Hunt for Red Oct. reg. \$49.95
OUR PRICE \$42^{95}

1040 ST
Personal Computer System
Includes:
1 MB RAM
3.5" Disk Drive
Mouse
Serial Modem Port
Hard Disk Port
Parallel Port
COLOR MONITOR

\$1079

WORD PERFECT
\$295
Mfg. Sugg. List \$395

XEP-80 (80 col. card for 8 bit ATARI) reg. \$79.95
OUR PRICE \$59^{95}
XMM-801 (Printer for 8 bit ATARI) reg. \$229.95
OUR PRICE \$179^{95}
XE VIDEO GAME SYSTEM reg. \$179.95
OUR PRICE \$149^{95}

MICROSOFT WRITE
\$99^{95}
Mfg. Sugg. List \$129.95

SOFTWARE • CLASSES • PUBLIC DOMAIN SOFTWARE • LASER PRINTING • SERVICE

LOGICAL CHOICE FOR COMPUTING
Authorized ATARI Business Center

6116 Lankershim Blvd.
North Hollywood, CA 91606
Infinity BBS (818) 760-0943

(818) 760-0738
Ask for Mark or Brett
Hours: 11-7 M-Sat. Closed Sun.

20% OFF
Your First Repair*

We Offer:
- FAST Turn Around
- Factory Trained Technicians
- Complete Inventory of Parts
- In House or On Site

We Repair:
- Printers
- PC's
- Terminals
- Monitors
- Lasers

LOCAL AREA NETWORK SPECIALISTS

New or Used Parts Available

Service Contracts Available

Monarch Microsystems
SALES ★ SERVICE ★ REPAIR

708 Valley St., Ste. P
Anaheim, CA 92801
(714) 758-1222

*Offer applies to labor costs only. Cannot be used more than one time. Offer valid for new customers only. For further qualifications, contact us at 758-1222.

LOOKING FOR

SOFTWARE?
CAD?
CAM?
ENGINEERING?

ALGOR - AutoCAD - CADKEY - EASYCAD - FASTCAD
MASTERCAM - SYNTHESIS - VENTURA - VERSACAD
COMPUTERS - PLOTTERS - DIGITIZERS - SCANNERS
HIGH RESOLUTION MONITORS - LASER PRINTERS
DESK PUBLISHING - COMPLETE SYSTEMS

PROFESSIONAL CAD CLASSES AVAILABLE
PLOTTING SERVICES

Southern California CAD Engineering
7663 Winnetka Avenue, Canoga Park, CA. 91306
(818) 700-0398

CP/M

On The Highly Exaggerated Death Of CP/M, And Other Matters

By Robert D. Athey Jr.

Recent publications by John Dvorak and others call the CP/M computers dead. Again.

So why do I keep getting calls from people about their CP/M problems and questions? It seems that we CP/M users are comparable to the VW bug drivers. We find our machines quite serviceable, fast enough for the jobs we need to do, and quite good for our requirements. Indeed, I find my CP/M computers more dependable than the MS-DOS beasties, and I use the CP/M devices easily as much as the newer machines.

Admittedly, the marketeers have written off the CP/M machines, but they are still useful, and being used by millions of satisfied computerists. Indeed, few vendors are making CP/M machines these days, and few magazines still support their users.

To my mind, the whole problem lies in the fact that small computers are now targeted to the corporate marketplace rather than the individual user (so much for the "personal" computer), and the marketeers *must* emphasize the new goodie-laden sexy machines, rather than just the simple and useful. Perhaps one day the computer companies will recognize the market for CP/M machines is not dead, as indicated by Kaypro's recent experience. When Kaypro decided to remainder the last of its CP/M machines through C.O.M.B. (resellers of remaindered goods), C.O.M.B. had many more orders than they could fill. Certainly the aftermarket for used CP/M machines is active, too.

Moving Your Computer? Here's An Idea...

Since my office is so cluttered with these all these computers and peripheral devices, I've needed to get organized (especially since I'm moving it!). I've labeled each of the ten or so cables with pressure sensitive tape labels. Each label has both the computer and the target peripheral written on it. The label was put around the wire or on the flat connector. At a user group meeting, I found that this was a novel solution to some, and common practice to others. You never know, do you?

Spreadsheets And Templates Revisited

Over many months, I've been suggesting uses for spreadsheets and their templates. The other day, I happened to think of another one. Crossword puzzles! What is a crossword puzzle but a collection of labeled cells? Obviously, the spreadsheet is the ideal tool for making up crossword puzzles. It's a ready made template! With just a little work, you could set up a Scrabble board, complete with the letter scoring and word scoring bonuses. I'd be interested in that array, if someone has cooked it up. Such a Scrabble game could be run by a sysop with a random letter dealer for the remote players as they go along (POPNET might be a good site for such an experiment). Of course, the player with the anagram program that came with *WordStar 4* would have a hidden advantage, but...

As part of the new look in my business, I've designed another template for client record keeping. This template is very like the record you see with your name on it in the blood bank or doctor's or dentist's office. Part of the need I have for this template is due to the sliding fee scale I use, as I need to keep track of how many hours have been charged and at what rate. I use the spreadsheet now for the invoices, as I'd shown in an earlier column, but the new template keeps a record of all historical client charges. You'll note they are charged a handling fee for any of my out-of-pocket expenses (the buzz word is really "General and Administrative Fee"), and a service charge for the late (after 30 days) payments. We show the "Client Record" template below. For simplicity, we show only the "b" column calculation formulae, but the "c" through "m" columns would be the same, provided we keep the client for the whole year. We start anew each calendar year, and give the clients fair warning whenever the fees change.

You'll notice the template is very like the invoice I showed earlier, except it has several months' records in columns. Indeed, you can use this to feed one month's charges into the invoice template, provided you use *Perfect Calc* in CP/M or *Lotus/VP-Planner* etc. in MS-DOS. It also looks very like a general income/expense ledger.

One of the nice things about the personal computer and the wide open spreadsheet is that you can devise the specialized form you need just for your own application. The nice thing about *Perfect Calc* is that it allows you to enter these expense/income items as they come up (daily if need be), and with the windows, you can use this as the on-screen basis for the invoice at the end of the month making sure you have all the charges. It is embarrassing to remember another charge two days after you've sent the invoices out.

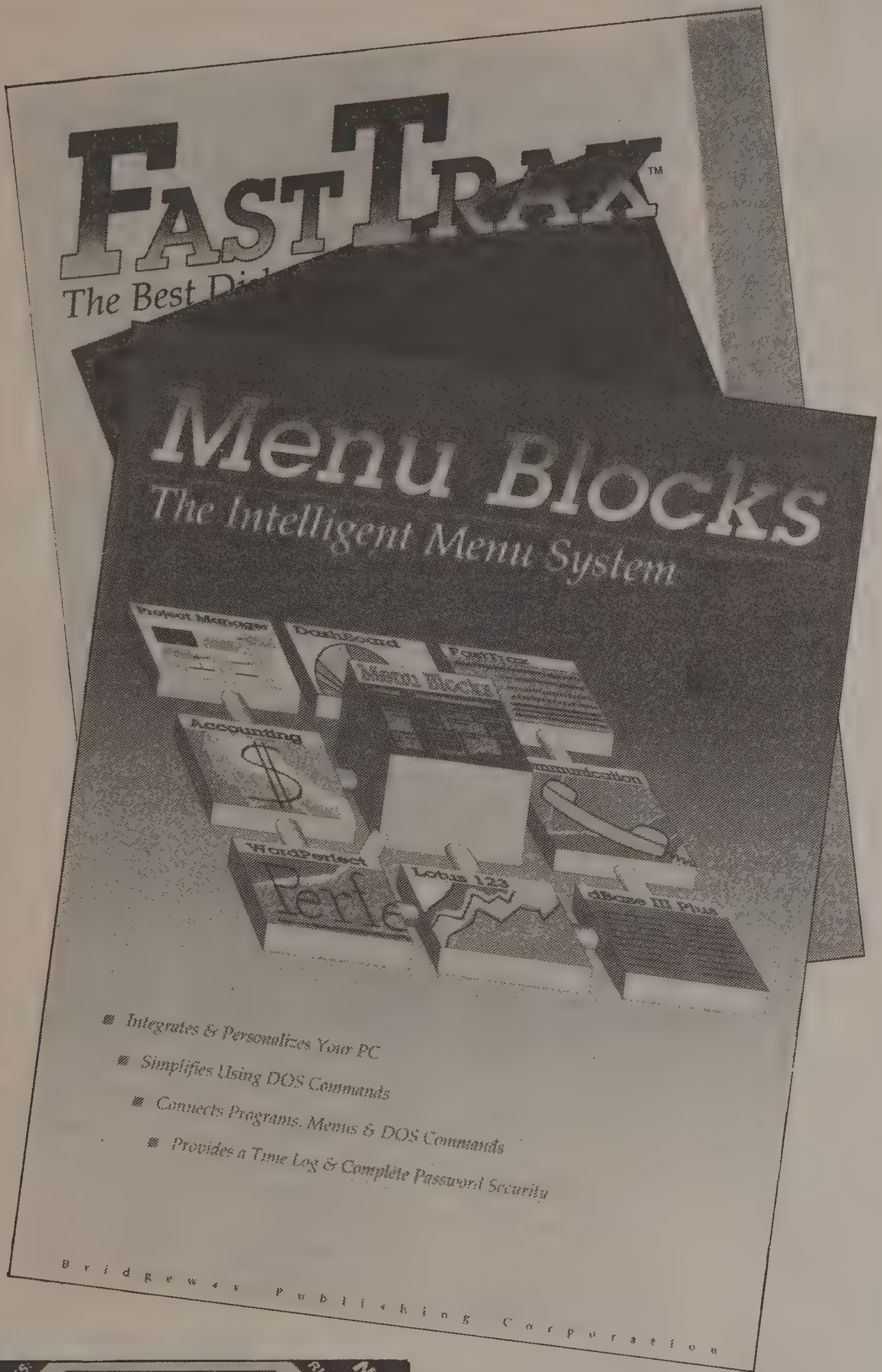
SCREEN SHOT OF "CLIENT RECORD" TEMPLATE

```
   a        b        c        d        e        f
1
2  Client Name:
3  Client Address:
4
5  Client Phone:
6  Date Started:              Date Completed:
7
8
9  Month           1        2        3        4        5
10
11 INCOME
12 ------
13 Payment, $
14 Payment, Date
15
16 CHARGES
17 -------
18 Amount Due, $
19 Days late
20 Service Charge, @ 0.05%/day b18*(.0005*b19)
21 ------------------ --------- -------- -------- -------- -------
22 Carryover Total  b20+b18
23
24 Expenses
25 Travel Expenses*
26 Purchased Goods*
27 Equipment Rental*
28 Telephone, Local
29 Telephone, Long Dist.
30 Analyses*
31 Testing*
32 Literature Search*
33 Typist
34 ------------------ --------- -------- -------- -------- -------
35 Expense SubTotal    sum(b25:b33)
36 Expense Surcharge 10%    .1*B35
37 ------------------ --------- -------- -------- -------- -------
38 Expense Total       b36+b35
39
40 Consulting hrs.
41 Hours @ ________A________/hr. $    b40*A
42 Consulting hrs.
43 Hours @ ______B______/hr. $    b42*B
44 Consulting hrs.
45 Hours @ ______C______/hr. $    b44*C
46 Travel Hours @ $25/hr., hrs.
47 Travel Hours @ $25/hr., $    b46*25
48 Expenses, Gen. & Adm., $    b38
49 ------------------ --------- -------- -------- -------- -------
50 TOTAL          b22+b41+b43+b45+b47+b49
51
52 *Copies of receipts on file
```

Ooops...

On to other things, I must make a correction on a comment I made in the discussion of the IMP modem operation software. The transfer rate for XMODEM transfers is 128 *bytes* (not bits) of information, and IMP's improvement is to 1000 *bytes* (again, not bits). I must have written that paragraph very late one night. Fortunately, I have friends who chide me when I'm sloppy, rather than coming after me with a hatchet. I blush and bumble on... ☐

Bob Athey has over 20 years of experience working on computers and runs his own company on chemical consulting and contact research. He can be reached through MicroTimes or at (415) 526-3541. *Copyright © 1988 by Robert D. Athey Jr. All rights reserved.*

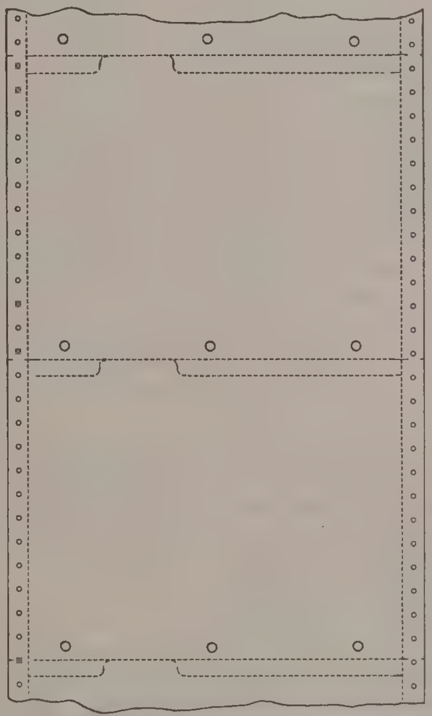

Fast Trax™
The Best Di
Menu Blocks
The Intelligent Menu System
Project Manager
Dashboard
FastTrax
Menu Blocks
Accounting
Communication
WordPerfect
Lotus 123
dBase III Plus
Integrates & Personalizes Your PC
Simplifies Using DOS Commands
Connects Programs, Menus & DOS Commands
Provides a Time Log & Complete Password Security
Bridgeway Publishing Corporation

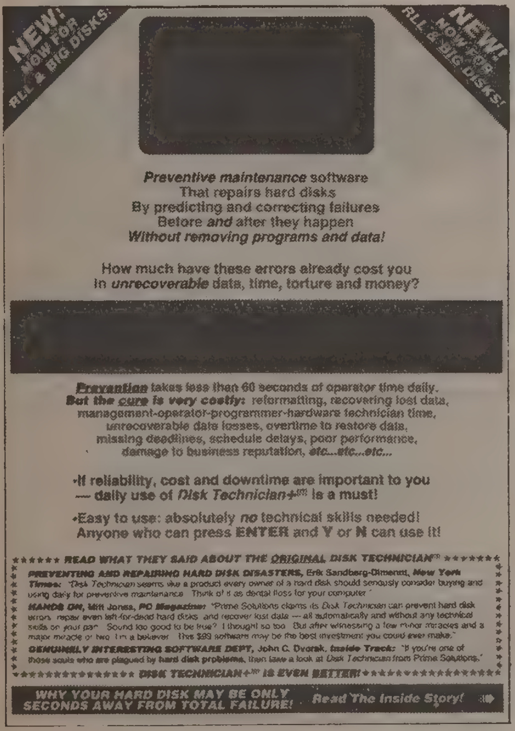
Two From Bridgeway Keep Your Computer In Order

Fast Trax and *Menu Blocks* from Bridgeway are two utility programs that help you organize your hard disk. *Fast Trax* is a hard disk optimizer that speeds up your hard disk in three ways. It defragments your files and directories, it places most of your files within disk cylinder boundries and it lets you put your most frequently used files on the "fast tracks" nearest to the FAT. *Menu Blocks* lets you create integrated, task oriented menus to organize your hard disk to suit your needs. It gives you seamless transitions between programs, menus and DOS commands. Bridgeway Publishing Corporation, 2164 East Francisco Blvd., Suite 1A, San Rafael, CA 94912. (415) 485-0948.

Index Tab Divider From IntelliTab

IntelliTab dividers are custom-printed index tab dividers that eliminate the need for outside die cutting and messy labels. IntelliTab dividers can be fed into a dot matrix printer as a continuous form or into a laser printer as cut sheets. They also allow for the printing of charts and text on the body of the folder as well as on the tab. IntelliTab Inc., P.O. Box 2617, San Francisco, CA 94126-2617.





Preventive maintenance software
That repairs hard disks
By predicting and correcting failures
Before *and* after they happen
Without removing programs and data!

How much have these errors already cost you
in ***unrecoverable*** data, time, torture and money?

Prevention takes less than 60 seconds of operator time daily.
But the cure is very costly: reformatting, recovering lost data,
management-operator-programmer-hardware technician time,
unrecoverable data losses, overtime to restore data,
missing deadlines, schedule delays, poor performance,
damage to business reputation, ***etc...etc...etc...***

- **If reliability, cost and downtime are important to you — daily use of *Disk Technician+*™ is a must!**
- **Easy to use: absolutely *no* technical skills needed! Anyone who can press ENTER and Y or N can use it!**

********* READ WHAT THEY SAID ABOUT THE ORIGINAL DISK TECHNICIAN™ **********

PREVENTING AND REPAIRING HARD DISK DISASTERS, Erik Sandberg-Diment, ***New York Times:*** "Disk Technician seems like a product every owner of a hard disk should seriously consider buying and using daily for preventive maintenance. Think of it as dental floss for your computer."

HANDS ON, Win Jones, ***PC Magazine:*** "Prime Solutions claims its *Disk Technician* can prevent hard disk errors, repair even left-for-dead hard disks, and recover lost data — all automatically and without any technical skills on your part. Sound too good to be true? I thought so too. But after witnessing a few minor miracles and a major miracle or two, I'm a believer. This $89 software may be the best investment you could ever make."

GENUINELY INTERESTING SOFTWARE DEPT, John C. Dvorak, ***Inside Track:*** "If you're one of those souls who are plagued by **hard disk problems**, then take a look at *Disk Technician* from Prime Solutions."

****************** DISK TECHNICIAN+™ IS EVEN BETTER! ********************

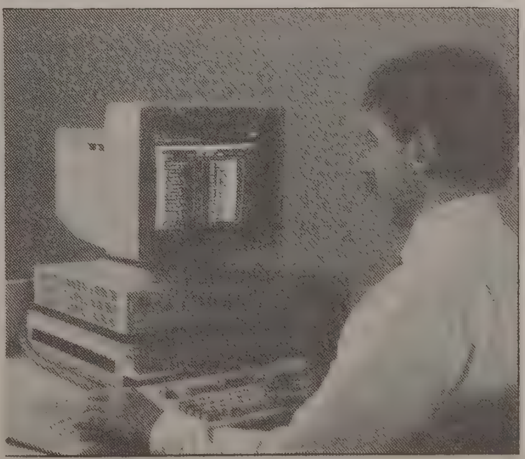
WHY YOUR HARD DISK MAY BE ONLY SECONDS AWAY FROM TOTAL FAILURE! Read The Inside Story!

Disk Technician+ Provides Daily Maintenance And Repair Of Hard Disks

Disk Technician+ from Prime Solutions is disk maintenance software designed to be used on a daily basis. It repairs hard disks by predicting and correcting failures before and after they happen without removing programs and data. No technical skills are necessary to use Disk Technician and it takes less than 60 seconds of operator time daily. ($129.95) Prime Solutions Inc., 1940 Garnet Ave., San Diego, CA 92109. (619) 274-5000.

Screen Reader Lets Visually Impaired Users Hear Their Screen

The IBM PS/2 Screen Reader keypad allows a blind or visually impaired user to hear text displayed on a screen. The screen reader combines adaptive hardware, software, documentation and support to provide easy access to computers. The Screen Reader's autospeak capability can monitor up to 20 areas of the display screen and read aloud changes as they occur. ($600.) Requires PS/2 System and speech synthesizer.



USER GROUP NETWORK

By Mary Eisenhart

Late But Not Forgotten

As promised, here are our spiffy new user group listings, updated for your computing convenience.

As expected, our deadline came and went without a noticeable letup in the deluge of new listings in our mailbox, so we'll take a look at some of these recent arrivals now.

Ed Ely of the **San Francisco/Oakland** chapter of the **AT&T PC6300 Users Group** calls in, aghast at having missed his deadline, to tell us that the group is alive and well. It meets on the first Wednesday of each month, alternating between locations in Oakland and San Francisco. Meetings are at 6:30 pm, and you're invited to call either Ed (415/836-0910) or president **Joe Mahoney** at (415)586-8376. Ed says it's an enthusiastic and growing group which enjoys good support from AT&T itself.

Diehard **Morrow** users will be delighted to know that **BAMDUA (Bay Area Micro Decision Users Association)** continues to offer support to users of these gone-from-the-stores-but-not-from-the-desktop machines. Meetings are held on the third Thursday of the month at the Albany Senior Center, 846 Masonic Street in Albany, at 7 pm. If you'd like more information, the club's voice information number is (415)534-4257; its bulletin board can be accessed at (415)654-3882. Thanks to **Ronald Jacobs** for the update.

Loretta Colbourn of the **Bay Area Atari Users Group** informs us that the group's BBS, which she describes as "one of the most active in the Santa Clara Valley," has a new number at (408)247-1257. She'd also like to pass along the information that general group meetings are held on the first Monday of the month at 7 pm at Bracher School. The school is located on the corner of Bowers and Chromite in Santa Clara. The group also has an ST Special Interest Group which meets at the same location at 7 pm on second Tuesdays; the 8-bit SIG meets at Hewlett-Packard, Wolfe and Pruneridge in Santa Clara, at 7 pm on third Tuesdays.

Loretta is BAAUG's secretary for 1988, and she invites you to call her for further information at (408)972-4456. Or you can call **Frank Nagle**, the group's president, at (408)241-0585.

The **Amiga** fans are out in force this month, with two groups reporting. **ACCESS**, the **Amiga and Commodore Computer Enthusiasts Society**, now meets on third Tuesdays in the community room at Homestead Savings and Loan, 999 E. Stanley Blvd. in Livermore. Meetings are at 7:30 pm, according to secretary **Ron Kremkow**, who awaits your calls for more info at (415)449-1784. Meanwhile, Vallejo now has its own Amiga-specific group in **VAMP**, the **Vallejo AMiga People.** Meetings take place at Software 1st in the Vallejo Corners Shopping Center on the second Tuesday of the month. If you'd like to know more, the person to call is **Bill Braun** at (707)554-0263.

For a variation on the theme of Macintosh evangelism, there are now two chapters of the **Christian Macintosh User Group**, according to **Rick Thrasher**, CMUG's director. The San Francisco chapter meets on second Thursdays and offers SIGs in Bible study and desktop publishing. The Silicon Valley chapter meets on first Thursdays in San Jose. Both groups offer a newsletter and technical support for members. If you're interested, give Rick a call at (408)437-1913.

Meanwhile, **Ruth Stever** of Southern California's **MacValley** reports that the group's April meeting, scheduled for April 19 in Burbank High School's cafeteria, will feature a presentation by **Ashton-Tate** of its new spreadsheet, *Full Impact.* The meeting's at 7:30 pm, and you can find out more by calling Ruth at (818)848-1277.

And out in the San Joaquin Valley, **Luther Myser** sends word that there's a new computer club out there in beautiful Manteca—**CUE (Computer Users and Enthusiasts).** The club is predominantly MS-DOS oriented, but offers SIGs for users of other machines. For more info you can call Luther at (209)858-4401, or check out the club's BBS at (209)239-9853.

Moving out into the online universe, we receive email from **Samuel Bassett,** who'd like to invite **UCSD Pascal** users to check out **USUS**, the **UCSD Pascal Users' Society**, which meets on CompuServe (GO MUSUS). Samuel, who describes himself as "the current Chaircritter of the organization," says "We serve the UCSD p-System community, including users of Apple Pascal, the Pecan Power System, Modula-2, Fortran, and soon C. We have a quarterly newsletter and semi-annual meetings." Samuel can be reached at (415)454-7282; he can also be reached at a host of electronic addresses including **samlb** on The WELL (415/332-6106), **71735,1776** on CompuServe, and **(hplabs,ptsfa,lll-crg)!well!samlb** on UUCP.

Tim Spofford reports a new number for the **Recovery BBS**, which offers message sections for Alcoholics Anonymous, NA, CA, Alanon/ACA, SA, SLAA and others. It operates at 300/1200/2400 baud at (415)441-2539.

Marc Schuyten of Corona would like interested parents to know about **The Parent SIG**, which he and his wife **Linda** started in 1980 as an all-volunteer group of parents concerned about the problem of child abuse. The Parent SIG now has its own BBS to combat the sexual abuse, exploitation, and molestation of children. **Families-Naturally** operates at (714)735-4279 at 300/1200/2400 baud, 8-N-1, 24 hours a day.

Joe Commodore of San Andreas has renamed his **Motherload 64** board. It's starting a new life as **Silicon Realms**, and offers support for Commodore PET and Plus/4 users (an orphaned group if ever there was one), as well as a Commodore Programmer's board, continuing and short story boards, and fantasy/adventure role playing. It's running on a Commodore 64 from 9:30 pm till 6:30 am at (209)754-5530. For the time being it runs at 300 baud, but Joe says 1200 baud is coming Real Soon Now.

Glenn Taylor of Santa Rosa isn't Joe Commodore, but he might as well be. He runs the **Cyborg-64** online user group, supporting users of the Commodore 64, 128, and Amiga computers. The board operates 24 hours a day at (707)526-6464 at 300-2400 baud. It features 65 megs of downloads.

Graphics enthusiasts are invited to check out **Art Canfil's tsunami bbs**, (415)ram-2-ram. Its overall theme is graphics compatibility, and there are GIF, *MacPaint* and other files available. The board is free, and runs 24 hours a day at 300-1200 baud.

And **Wanda Grycz-Hernandez**, the Information Systems Manager for the City of Richmond, sends an update on the **City of Richmond BBS**, which offers a variety of public interest information on city activities and downloads of information files. The board operates while the city offices don't, essentially: 6 pm to 6 am on weekdays, and 24 hours a day on weekends. Parameters are 8-N-1, and the board supports 300 and 1200 baud transmissions. The number is (415)620-6500.

On that note, I'll close for another month. Please keep those communiques coming—email to **microx** on The WELL (415/332-6106) and US Mail to User Group Network, 5951 Canning Street, Oakland, CA 94609.

BULLETIN BOARDS

INTERNATIONAL

FidoNet Argentina (054). (011) 541-22-419. 8-N-1 3 PM-11 AM PST. The 1st fido node in Argentina has over 450 subscribers. Specializes in issues from S.A. PD software library to d-load. Sysop: Pable Kleinman

Cassia Express. (065) 344-9163. 300/1200/2400 24 hrs. Singapore. Sysop: N.M.Rahman

Remote Bulletin Board (Singapore). (065) 445-1646. 9600/2400/1200 24 hrs. 218 MB Online (IBM upload/download). Sysop: Umar A. Rahman

Terrapin Station. (203) 656-0134. Grateful Dead Board. Sysops: Klaus and Gretchen Bender.

209

Bertha Board. (209) 239-9853. 300/1200/2400 8-N-1 24 hrs. MS-DOS, others. Some emphasis on programming. Up- & downloads. Free. Registration required. Sysop: Kenneth Roach.

213

Ashton-Tate Support. (213) 538-6196. Free technical support, answers to questions about Ashton-Tate software products.

Carrier Point Information. (213) 423-4999. 1200/2400 8-N-1 All but 1:30-3:30 PM. TBBS multi-user system. Operating 10 lines, 9 in rotation. All lines support 300/1200/2400 baud rates.

Chat Line. (213) 534-4311. Multi-line, Multi-user interactive group & private forums. Downloads, Database.

Dial-Your-Match. (213) 539-2448. Lomita.

Dial-Your-Match. (213) 633-4349. Downey.

Dial-Your-Match. (213) 461-9899. Hollywood.

Dial-Your-Match. (213) 467-6776. Hollywood.

Dial-Your-Match. (213) 558-4336. Culver City.

David's Amazing BBS. (213) 459-5891. Conferencing (like the Well, but easier to use). Electronic bar; talk; matchmaking; 5 lines; unique software. Sysop: David Dennis

ICN. (213) 204-0646. 2400/1200/300 24 hrs. The place to buy/sell/trade collectibles (stamps, books, etc.)

Information Symposium. (213) 258-5086. 300/1200/2400 8-N-1 24 hrs. Serving the Info. Professional, Tech. Info, M.I.S. Employment. MS-DOS; OS/2; graphics. Password req'd for access is "Micro." Sysop: William Bloomer

Lynzie's Motherboard. (213) 650-0519. 300/1200/2400 8-N-1 24 hrs. Multiinterest. Social events for users. If you're looking for a discriminating BBS, this is the place to be. Sysop: Lynzie Flynn

Oil Patch PC Board. (213) 427-5980. 300/1200 8-N-1 Eves. only. Exclusively C. Libraries; utilities; source code; tutorials. Sysop: Rick Shoop

Southland News. (213) 402-4079. 24 hrs. An online newsmagazine w/ general news, comments, entertainment, computer news show, club & swap meet listings.

The Great American Audio/Video Board. (213) 469-6542. 300/1200 8-N-1 Eves. Reviews, essays, buyers guide, instruction. Sysop: Keith Bass

Westside. (213) 933-4050. 3/12/2400 8-N-1 24 hrs. 17 lines w/chat, library, matching. Public & E-mail.

Beaver Creek. (213) 437-1410. 8-N-1 All but 4-9 PM. Sysop: John Campbell

Time-X-Change. (213) 329-3922. 300/1200 8-N-1 24 hrs. Timex-Sinclair & CP/M users. Free. Sysop: Dave Clifford

Electronic Media Network. (216) 241-2612. 1200 8-N-1 23 hrs. Provides link between employers and high-tech and highly skilled professionals.

SATURDAY
APRIL 16
COMPUTER BARGAIN SHOW

PASADENA
Computer Swap

EVERY ITEM ON DISPLAY IS AVAILABLE FOR IMMEDIATE PURCHASE AT BARGAIN PRICES

PASADENA CENTER
PASADENA, CA

DIRECTIONS:

From the 110 Freeway: Exit Arroyo Pkwy. North. East (right) on Green St. South (right) on Euclid.

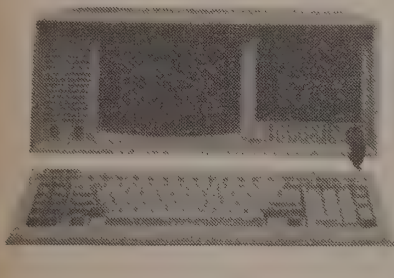
From the 210 Freeway: Exit Fair Oaks South. East (left) on Green St. South (right) on Euclid.

10 A.M. to 5 P.M.

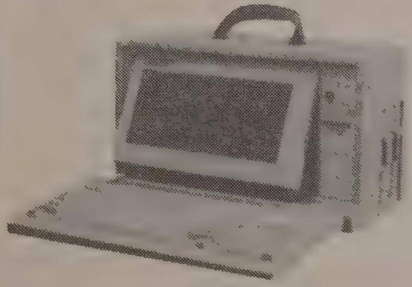
Admission $5 Children Under 12 FREE For Info. Call in CA 800-433-7469

A MICROSHOWS PRODUCTION

Songtech International, Inc.



CRT-PORTABLE



LCD-PORTABLE

BASIC UNIT SYSTEMS OR KIT:

Desk-top 8088-XT Basic unit	$595
Desk-top 80286-AT Basic unit	$895
CRT portable kit for XT	$360
CRT portable kit for AT	$380
CRT portable XT Basic unit	$799
CRT portable AT Basic unit	$1295
LCD portable kit for AT & XT	$599
LCD portable XT Basic unit	$1070
LCD portable AT Basic unit	$1370

CARDS AND PARTS:

Turbo Motherboard (0K)	$80
AT-80286 Motherboard (0K)	$280
Math Coprocessor 80287-8	$235
Math Coprocessor 80287-10	$275
Math Coprocessor 8087-2	$155
41256, 4164 chips	Call
Monochrome Graphic printer card	$40
Color Graphic printer card	$50
EGA card	$129
576K RAMbank (0K)	$35
Copy II PC option copy card	$69
2MB RAMbank for XT (0K)	$90
2MB RAMbank for AT (0K)	$105
Floppy disk drive (360K)	$68
Floppy disk drive (1.2MB)	$80
3½" floppy disk drive with kit (720K)	$99
20MB drive w/controller	$285
30MB drive w/controller	$315
40MB drive	$385
Keyboard for XT and AT	$50
1200BPS Modem	$75
2400BPS Modem	$169
EPROM Programmer	$80
EPROM Eraser w/timer	$95
IC Tester	$85
PAL programmer	$239

LOGIMOUSE SPECIAL:

Logitech Serial Mouse C7	$69
Bus Mouse	$78
PC Paintbrush	$19
Publisher mouse	$109
Optimouse w/Dr. Halo	$99
Logicadd	$45

PLEASE CALL FOR MANY, MANY MORE PRODUCTS...
VISA, MC AND CHECK ACCEPTED.
DEALERS, DISTRIBUTORS, VOLUME PURCHASES, CORPORATION PURCHASE WELCOME

4588 Peralta Blvd., Suite 15
Fremont, CA 94536 • **415-794-9864** • **415-794-9867**

HLC COMPUTERS
"Where Technology Makes Sense"

12 MHz 40 MB AT

$1379

- Norton S.I. 13.3
- Intel 80286-10 CPU
- Up to 12 MHz Keyboard/Hardware switchable
- **640K** RAM exp. to 1 MB on board
- 40 MB Miniscribe (H.H.) Hard Disk
- 1.2 MB Floppy Drive
- 200 Watt Power Supply
- Hi-Res amber monitor
- NCL FDD/HDD Controller
- Herc. compatible graphics card w/ printer port
- AT Multi I/O Card
- AT Enhanced 101 Keyboard
- AT 3 LED Turbo Case
- Assembled & Tested
- 1 Year Limited Labor & Parts Warranty

CGA Upgrade	$179
EGA Upgrade	$389
Multiscan Upgrade	$539

XT Turbo
$799
WITH 30MB HD
$859

- 4.77/10 MHz Switchable
- 512K on motherboard
- 20 MB Seagate HD w/controller
- 150 W Power supply
- Hi-Res amber monitor
- MGP Card
- 360K Floppy Disk Drive w/FDC
- AT Keyboard/XT Case
- Assembled & Tested
- FCC Approved Class B
- 1 Year Limited Labor & Parts Warranty

CALL FOR COMPLETE REPAIRS & SERVICES FOR MOST OUT OF WARRANTY EPSON PRINTERS

386
40 MB COMPLETE SYSTEM
WITH 1 MB MEMORY
Call For Full Configuration

$2659

HLC Computers
2467 East Orangethorpe Ave.
"Cedarwoods Business Park"
Fullerton, CA 92631
(714) 871-6400

MasterCard VISA

NETWORK SPECIALISTS

SALES-INSTALLATION
SUPPORT CONTRACTS

NOVELL
ELS, 286A $495
ADV. NETWARE 86 W/KEY 1250
ADV. NETWARE 286 W/KEY VER 2.0A 1495
ADV. NETWARE 286 W/KEY VER 2.0A PS2 1595
ADV. NETWARE SFT W/KEY VER 2.1 3250
ADV. NETWARE W/KEY VER 2.1 FOR AT BUS 2650
ADV. NETWARE 286 VER 2.1 FOR MICRO CHANNEL 3195

NETWORK CARDS
SMC ARCNET 210/110 . . . . .$169/159
TIARA LINK LANCARD/A 195
TIARA LINK LANCARD/A-II FOR PS2, 50, 60 & 80 495
ORCHID PCNET 375
ETHERNET/GATEWAY 269/325

NETWORK OPTIONS
ARCNET 8 PORT ACTIVE HUB . . .$425
ARCNET 4 PORT PASSIVE HUB 75

386/286 SERVERS
AST 286, 20M $1795
AST 386 . . . . .CALL
ACER 900/1100 . . .FROM 1499/2650
MICRONICS 386, 20MHz (COMPAQ CLONE) 2195
CALL FOR QUOTES.
POWER SUPPLIES, NOVELL, ACER, AST, ORCHID, IRWIN, GATEWAY

DEALERS AND CONSULTANTS
QUANTITY/TRADE DISCOUNTS

TERMS:
- Corporate Accounts Accepted
- Certified or cashiers check.
- Add 3% for Visa/MasterCard purchases.
- Allow 1 week for personal & company checks to clear.
- All prices are subject to change without notice.

MCC
2716 Ocean Park Blvd. #3075
Santa Monica, CA 90405
(213) 452-1335

drug addiction & compulsive behaviors. Meeting listings & AA files.

SF Robotics Society. (415) 752-7228. 300 24 hrs. Extensive robotics & hardware bibliography. Calendar of events.

SFPCjr. (415) 997-4874. 1200 8-N-1 24 hrs. Sysop: Larry Buoncristiani

SFPCUG. (415) 621-2609. 1200/2400 8-N-1 24 hrs. Emphasis on IBM & compatibles. Message board & info exchange. Dozens of downloadable files. Sysop: Richard Couture

SNLNDRO. (415) 895-1785. 300/1200 N. Cal HUB for CMS School Network. Op. by San Leandro HS for CUE & educators. 5MB. Sysop: Robert Shayler

Telenaut DIBBS. (415) 388-4007. 1200/2400 8-N-1. The Graphics Meeting Place where professionals from graphic arts, publishing & computer graphics meet. MS-DOS software.

The Apocryphal Code. (415) 347-2618. 300/1200 8-N-1 24 hrs. Sysop: Dave Brody

The DogLab. (415) 594-9806. 2400 24 hrs. Large file library; several echomail conferences.

The Flea Clinic. (415) 592-4060. 2400 24 hrs. Large file library; several echomail conferences.

The Pilgrim. (415) 731-2422. 300/1200. Spirituality, Catholic nursing. Spiritual development for homosexuals from a Catholic perspective. Oriented to UCSF.

The Switch. (415) 578-1919. 300 24 hrs. Free online entertainment, brought to you by Interactive Productions.

The Wasteland. (415) 479-4520. 300/1200. Debate, discuss & intellectualize. Private mail, computer SIG's. Friendly Sysop.

T-Room. (415) 756-6235. 300/1200/2400 8-N-1 24 hrs. Alternative lifestyles information & fun. Macintosh library. Voice validation required for access.

Video Vision - The Graphic Library. (415) 366-6409. 300/1200/2400/9600 8-N-1 24 hrs. A color BBS mainly for graphics, arts & games. User must read bulletin 1 or download "POLICY.TXT" & "FILELIST.ARC". Sysop: Roel Sarceno

Wetware Diversions. (415) 753-5265. 300/1200/2400 24 hrs. Multi-line, UNIX based system for conferencing & gaming. Running PicoSpan. Sysop: Christopher

YET ANOTHER BULLETIN BOARD!. (415) 689-8952. For IBM's & TRS-80's. Novices welcome! Sysops: Jim & Alex Stewart

CIRACS Network. (415) 463-2185. 300/1200 24 hrs. SIG to human service providers working in youth, drugs, alcohol & AIDS prevention & treatment. Sysop: Janet Morgen, MPH

Emerald Lake Fog #48. (415) 365-2650. 300/1200/2400. No fee; immediate access, CP/M & DOS.

Foothill College Science And Engineering BBS. (415) 941-5725. 300/1200/2400 24 hrs. Educational Program Information. Sysop: Long Tran

Kortek. (415) 327-4589. 110 to 9600 8-N-1 24 hrs. PD BBS for IBM & MS-DOS computers. Free. Looking for new members with new ideas to be a better board.

Marin-Sonoma PC Users Group (MSPCUG). (415) 927-1216. 300/1200/2400 24 hrs. IBM PC software & talk. Biz application oriented, official electronic voice of one of most influential user groups.

Railbird's Racing BBS-100. (415) 278-0767. 300 8-N-1-E 3-8 AM. Offering Daily handicap of races we feel we can beat. Trouble & Lasix list too. News on sport & much more!

Video Seven Bulletin Board. (415) 656-0503. For owners of Video Seven VEGA graphics products. Updates and Support.

516

Pal-East. (516) 665-1851. 300/1200/2400 8-N-1 24 hrs. Multi-line, E-mail,live chat on-line, Public Boards & library. Geared to alternate lifestyles Sysop: Scott

619

Dial-Your-Match. (619) 428-0318. Imperial Beach.

Dial-Your-Match. (619) 741-1377. Escondido.

Dial-Your-Match. (619) 746-6751. Escondido.

707

911 Emergency Services. (707) 664-1639. 1200/2400 & 9600 Fastco 24 hrs. Oriented to emergency service employees: fire, police, EMS, & interested public. Free.

North Bay Billboard. (707) 552-9758. 300/1200/2400. IBM, Mac, Atari ST, 20 Megs. In Vallejo.

Cyborg-64. (707) 526-6464. 300/1200. On-line user group supporting C64, C128, Amiga.

Adventurer's Castle. (714) 871-4119. 300/1200 24 hrs. Real time gaming. Sysop: William E. Hart

Amiga Friends. (714) 870-4754. 300/1200/2400 24 hrs. Run by one of S. California's largest Amiga clubs. Special interest sections, downloads, club activity information. Sysop: Scott Thayer

Bits & Pieces of Anaheim. (714) 630-8897. Amiga and IBM.

Bits & Pieces Time BPT-Main. (714) 630-8897. 300/1200/2400 24 hrs. No parity, full duplex. BBS determines baud rate by ret. key. Large software library for Commodore 64/128, Amiga & IBM. Sysop: Mike Dalton

Cryonics & Immortality. (714) 734-0139. 1200 8-N-1 3 PM-6 AM.

Dial-Your-Match. (714) 825-0901. Colton.

Dial-Your-Match. (714) 773-5326. Fullerton.

Dial-Your-Match. (714) 682-8763. Riverside.

Dial-Your-Match. (714) 739-8822. Buena Park.

Dial-Your-Match. (714) 751-4860. Santa Ana.

Dial-Your-Match. (714) 857-2470. Irvine.

French Connection. (714) 858-8111. 300/1200/2400/9600. 16 multi-line BBS in Orange County. Dating service; 500 megs of software for users. Sysop: Stephen M. Cohen

Fretwork. (714) 974-7428. 300/1200 24 hrs. Punter protocol for file transfers. Commodore specific. C-TUG members's night - every Fri. Sysop: Jeff Griffith

Happy Trails. (714) 547-0719. 1200/2400 8-N-1 24 hrs. MS-DOS; Multi-user; E-mail; Downloads; SIG's; On line games Sysop: Don Inglehart

Imperial Palace of DB. (714) 860-0889. 1200 24 hrs. Commodore 64, 128.

Nebula 6. (714) 595-6577. 300/1200/2400 8-N-1 24 hrs. Write for a free newsletter. P.O. Box 1071, Walnut, CA 91788. PC-Pursuitable. Sysop: Michael Quirino

Network XXIII. (714) 548-4836. 1200/2400/9600 8-N-1 24 hrs. On-Line registration; 1500+ files; conferences; online games. Sysop: Jim Brandon

PC Exchange. (714) 956-5468. 2400/4800 24 hrs.

PC Exchange. (714) 956-5468. 1200/2400/9600.

PC-LAIR. (714) 839-9580. 300/1200/2400 8-N-1 24 hrs. PC-DOS; MS-DOS. Large PD software library. Sysop: Eric Drochner

Software Exchange. (714) 552-3515. 300/1200/2400 8-N-1 24 hrs. For IBM & compatibles. Over 3000 programs in 152 megs. Fastest-growing BBS in Southern California! Sysop: John Coon

The Byte Zone. (714) 491-7635. 300/1200 24 hrs. Serves all Tandy computers & many others, incl. MS-DOS. Features adventure help files, elect. mail,message bases, etc. Sysop: Franco Collino

The End of the Line. (714) 645-6581. 300/1200/2400 8-N-1 24 hrs. Running Wildcat BBS software. Pub. dom.& shareware for IBM & compatibles. Private and public message bases.Scorecast data files. Sysop: Bob Kelly

TripWire TECHnologies (PCB). (714) 964-1146. 1200/2400 24 hrs. Multilingual operations with 7 national echomail areas. (Beta testing PCBmail) Sysop: William Kidd

Wellspring RBBS. (714) 856-7996. 300/2400 M-F 5 PM-8 AM. S-S 24 hrs. Medical/AIDS/Software.

Send YOUR User Group Information to:

MicroTimes
USER GROUPS
5951 Canning St.
Oakland, CA 94609

(Please limit descriptions to 15 words or less.)

IBM AT & XT COMPATIBLE COMPUTERS
SERVICE+ QUALITY+ PERFORMANCE

TOP QUALITY
LOW PRICE

FREE HARDWARE CONSULTING
REPAIR AND SERVICE AVAILABLE

LNX COLOR TURBO AT-10
80286 10 Mhz, 512K Ram, High Density Floppy, Parallel/Clock, Color Monitor with Color Graphics Card, Hard/Floppy disk controller.
COMPLETE SYSTEM
$1195.00 SPECIAL

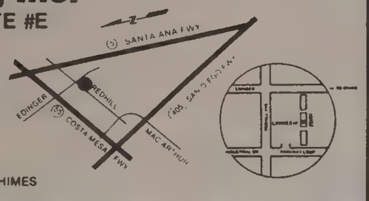
LNX PORTABLE TURBO AT-10
80286 10Mhz, 1 MB Ram, High Density, Parallel/Clock/Serial/Game, LCD dispaly runs Color Graphics, Hard/Floppy disk controller. 640X400 Available
COMPLETE SYSTEM
$ CALL

LNX TURBO XT-10
10 Mhg, 256K Ram, 360K Floppy with Controllor, Mono Monitor with Graphics card, AT style Keyboard.
COMPLETE SYSTEM
$ CALL

OPTIONS
Licensed MS-DOS 3.3, Hard disk 20/30/40/80 MB, VGA/CGA/EGA Monitor/Card, Co-Processor, Mouse, Tape Backup, Moden, Printer & AT 386 available. We package CAD/CAM systems.

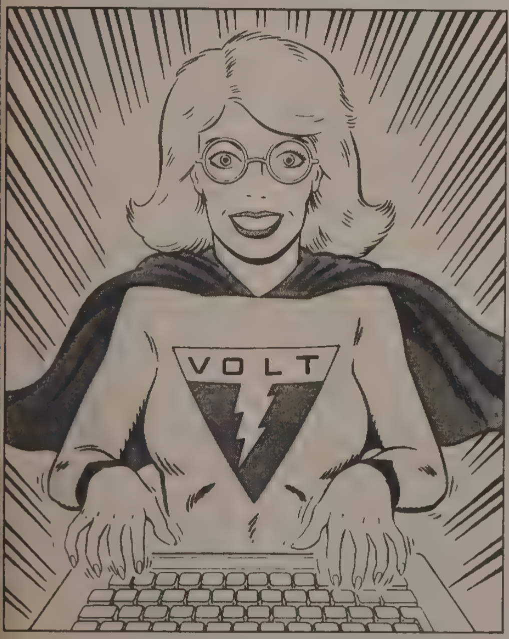
★ WE CONFIGURATE TO YOUR REQUIREMENTS ★

Linnex Computers, Inc.
15052 REDHILL AVENUE, SUITE #E
TUSTIN, CALIFORNIA 92680
FAX: (714) 259-1120
CALL (714) 259-1122
HOURS 9 am - 6 pm Monday - Friday
10 am - 3 pm Saturday
PRICE SUBJECT CHANGE WITHOUT NOTICE
IBM AT & XT IS A TRADEMARK OF INTERNATIONAL BUSINESS MACHIMES



VOLT INTRODUCES
HIGH ENERGY TEMPS

WE'RE LOOKING FOR
HIGH ENERGY PEOPLE
FOR OUR HIGH PAYING POSITIONS



IMMEDIATE OPENINGS FOR:
- PC SOFTWARE USERS skilled in wordprocessing, spreadsheet and database
- Wordprocessing secretaries
- Data Entry operators
- Customer service representatives

LET US PUT OUR
37 YEARS
OF EXPERIENCE
TO WORK FOR YOU!

Many Benefits Including Lucrative Referral Bonuses

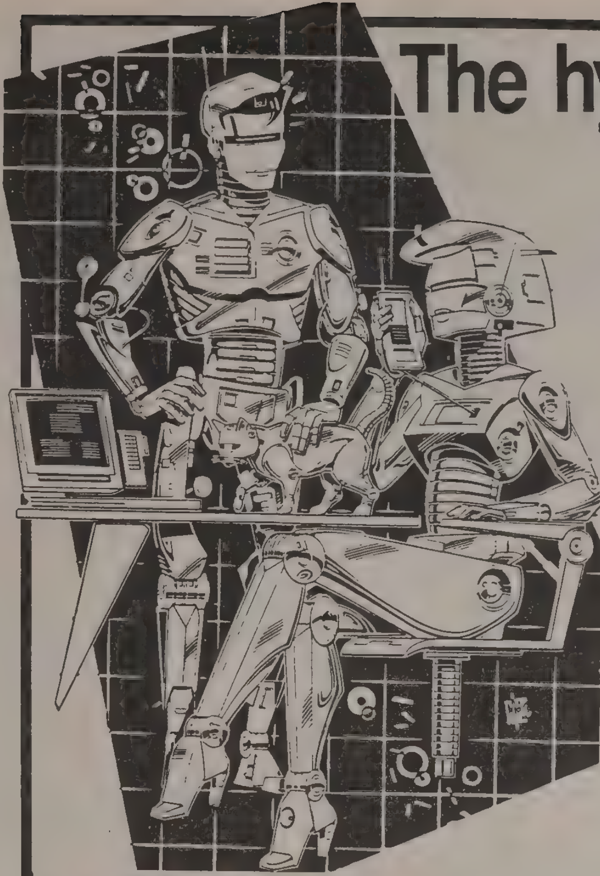
Most Important —
Lots of Interesting Jobs
with our Prestigious Clients

THE HIGH ENERGY PEOPLE
VOLT
TEMPORARY SERVICES

CALL NOW FOR AN APPOINTMENT!

ANAHEIM (714) 879-9330
BURBANK (818) 848-2000
ENCINO (818) 990-5495
LOS ANGELES (Central) (213) 388-3271
LOS ANGELES (West) (213) 477-1330
NEWPORT BEACH (714) 852-1580
PASADENA (818) 796-8658
TORRANCE (213) 772-7757

Never a Fee E.O.E.



The hyperage
is just
around
the
corner.

Will you be ready?

New ways of using computers and new ways of organizing text and data are just ahead. If you're interested in **HyperCard**™, and other hypertext products, there is a publication just for you – ***HyperAge***, the first magazine devoted exclusively to this new, emerging technology.

When you read ***HyperAge***, you get advice and information from the world's most knowiedgeable experts. You'll learn from writers like **Danny Goodman**, best-selling author of *The Complete HyperCard Handbook*, **Ted Nelson**, the theorist who developed the concept of hypertext, **Dan Shafer**, author of *HyperTalk™ Programming*, and **Mitchell Waite**, editor of those great Waite Group computer books.

HyperAge™

Call Toll Free: (800) 682-2000

YES! Enter My Charter Subscription Subscription to HyperAge Today!

☐ $19.95 for 1 Year (6 issues)
☐ $34.95 for 2 Years (12 issues)
☐ $49.95 for 3 Years (18 issues)

Mail To:
HyperAge
108 East Fremont Avenue
Sunnyvale, CA 94087

☐Check ☐VISA ☐MasterCard
Card #________ Exp:______
Signature: ________
Name:________
Company: ________
Address:________
City:________ State:____ Zip:____

SAVE BIG BUCKS

12 MHz AT w/ 40 MB Hard Disk
- 6/12 Dual Speed
- 512K RAM
- One 1.2 MEG Floppy Drive
- HDD/FDD Controller
- 40 MB Hard Disk
- 200 Watt Power Supply
- 101 Keyboard
- Hi-Res Amber Monitor
- **INCLUDES SOFTWARE PROGRAMS WORTH MORE THAN $200 (on hard disk)**

1 Year Warranty

$1299

Option: EMS up to 4 MB on board now available.

10 MHz XT w/30 MB Hard Disk
- 4.77/10 Dual Speed, 640K RAM
- One 360K Floppy Drive
- 30 MB Hard Disk,
- Serial/parallel/game/clock/calendar
- Mono/graphics card
- Monochrome monitor (swivel base)
- Case w/ Keylock, 3 LED's, Reset & turbo buttons
- 84-key AT Keyboard
- **INCLUDES SOFTWARE PROGRAMS WORTH MORE THAN $200 (on hard disk)**

1 Year Warranty

$889

MONTHLY SPECIALS
- **AT/XT Enhanced Keyboard** **$46**
  Mechanical-Tactile; 101 keys
- **Thomson Multisync Monitor** **$450**
  Model 4375M; 800 X 600
  (same as Mitsubishi Diamond Scan Model 1371A)

PHOENIX COMPUTERS
727 N. Brea Canyon Rd. #3
Walnut, CA 91789
(714) 595-6477

TIMER
12607 Hidden Creek Way #C
Cerritos, CA 90701
(213) 404-6225

408

Bay Area Atari. (408) 249-7722. 300/1200 24 hrs.

Bay Area BBS. (408) 723-7238. 300/1200/2400 Several "live" doors including adult & X-rated. Sysop: Jim Acker

Byte Bandits of America. (408) 374-3974. 300/1200 24 hrs. Free. MS-DOS Sysop: Sam C. Brown

BYTE Bandits of America - TRS 80's. (408) 374-5139. 2 monthly meetings in Campbell, CA

Campbell Chapter of 64/More Commodore. (408) 946-6154.

Computer Pages. (408) 247-5500. 300/1200 24 hrs. Multi-line FREE! First on-line shopping guide and directory in Silicon Valley. Sysop: Computer Pages

Computer Tech. (408) 946-3559. 1200/2400. BBS for computer groups. File transfers. All free.

Cupertino Chapter of 64/More Commodore. (408) 946-6154.

Dial-Your-Match #296. (408)720-0724.300 8-N-1 24hrs. Sunnyvale. Matching and e-mail.5 boards. Verification required. No fees.

Digit Mailbox. (408) 946-6154. 3-9600 24 hrs. All welcome. Amiga run. Official 64/MORE BBS.

Matchmaker San Jose. (408) 248-5755. 300/1200 24 hrs. The ultimate pen pal system. Make a date, meet a friend, have the time of your life. Type "mm" at login. 300 plus calls/day. Sysop: The Matchmaker

Non-Smokers BBS. (408) 298-4277. 300/1200/2400 8-N-1 24 hrs. Restaurant/hotel guide. Health information.

North Valley Chapter of 64/More Commodore. (408) 946-6154.

Pacific Exchange Multi-line. (408) 946-8561. 1200/2400. Large IBM file selection, conferences, multi-node chat.

PC-Shareware. (408) 270-4084. 1200/2400 8-N-1 24 hrs. Registration required. Dedicated to shareware for IBM PC. Over 50 megs of most popular & latest available. Sysop: Bob Allen

Public Domain Software Special Interest Group (PDS-SIG). (408) 270-4085. 1200/2400 8-N-1 24 hrs. One of largest selections of PD & shareware PC software.Over 250 megs. of files. Registration required. 64 directories.

San Jose Chapter of 64/More Commodore. (408) 946-6154.

Silicon Valley FOG. (408) 738-1071. 300/1200/2400 8-N-1. Message system & 42 Megs of CP/M & MS-DOS files. Sysop: Bob O'Connor

ST Hotline. (408) 244-2493. 9600 24 hrs. Atari ST only. 110 Meg hard disk.

Stock Market. (408) 733-9341. 300/1200 8-N-1 24 hrs. Provides precise, reliable price forecasts for 6000 NYSE, AMEX & OTC (NMS) stocks. Multi-line, multi-user system.

S-100. (408) 262-5150. 300/1200/2400 8-N-1. CP/M & MS-DOS libraries.

The Dungeon. (408) 992-0846. 300/1200 8-N-1 24 hrs. All adult, registration required. Sysop: Sir Dep

The Guild. (408) 988-4004. 300/1200/2400 24 hrs. 160 MB online. Hardware SIG's, BBS info, Professional Certification Testing. Sysop: Nat'l BBS Soc. Staff

Timex/Sinclair BBS of Silicon Valley. (408) 735-7390. 300/1200 8-N-1 24 hrs.

Towards 2000!!. (408) 773-9759. 300/1200 8-N-1 24 hrs. IBM oriented. No Fee. Message base. Sysop: Keith Proctor/Chris III

TRS-80. (408) 374-5139. 300/1200 24 hrs. Tandy. Free. Sysop: Sam C. Brown

Gavilan User Group. (408) 374-5140. 300/1200. Portables. Free. Sysop: Sam C. Brown

Hotel California. (408) 942-1081. 300/1200 8-N-1 24 hrs. Commodore, Punter D/L. Sysop: Big Foot

LDW Line. (408) 435-1929. 300/1200 8-N-1 8 PM-9 AM. Official BBS of LDW, Inc. features new prod. bulletins, LDW BASIC programer's support, ul/dl, & free spreadsheet for eval. Sysop: Bogdan Blaszczak

PDS-SIG. (408) 270-4085. 2400 8-N-1. Largest selection anywhere of pub. domain & shareware software.

SBUG-BBS. (408) 249-8259. 1200 8-N-1 24 hrs. Membership in SBUG (or registration fee req'd.) Sysop: Jim Gonsalves

415

ABACUS - Atari Bay Area Computer Users Society. (415) 587-8062. 300/1200 24 hrs. Free messages and downloads for 8-bit & ST users. Sysop: Ed Van Pelt

AIDS BBS. (415) 626-1246. 300/1200 24 hrs. Free. All welcome. Mail send/receive on AIDS: please not on other subjs. due to time & access limitations. Library. Sysop: Ben Gardiner

Amiga Addicts Anonymous (AAA). (415) 222-9416. 300/1200 24 hrs.Amiga Chat & Pub. Dom. files. Sysop: Randy Spencer

AUGment - Amiga Users Group of Silicon Valley. (415) 659-9169.

Back Door. (415) 756-6238. 300/1200/2400 8-N-1 24 hrs. Alternative lifestyles information. IBM clone library. Voice validation required for access.

Bay Area's Luv Connection. (415) 387-0529. 8-N-1. Multiline private chat, matchmaking, E-mail, SIG's & numerous pub. boards.

Boot to the Head. (415) 352-5411. 300/1200 8-N-1 24 hrs. Multiplayer games only. Pyroto, Tradewars Taskforce & more.

Catholic Information Network - Santa Clara County. (415) 967-3420. 300/1200 8-N-1 6 PM-8 AM. PC pursuitable through (408) through Santa Clara BBS. No access charge. People of all faiths welcome.

Catholic Information Network - SF. (415) 387-3251. 300/1200 8-N-1 24 hrs. PC pursuitable. Active conferences. Simple registration, no access charge. People of all faiths welcome.

Charisma. (415) 349-6576. 1200/2400 8-N-1 24 hrs. Paradox, dbase, IBM utics. 3500 files. Sysop: Tom Swegles

Commodore Connection. (415) 458-1005.

Dial-Your-Match. (415) 964-3255. Mountain View.

Dial-Your-Match. (415) 991-4000. Daly City.

Dial-Your-Match, #34l. (415) 537-0666. 300/1200 24 hrs. Nationally networked, meet the 250 callers in the date-a-base. Sysop: Matchmaker 2

Dr. Don's. (415) 885-1973. 1200/2400 24 hrs. Discussion; ComputerTalk; BMW-CarTalk; SportsTalk; BoardRoom. Sysops: Dr. Don, Bimmer Pilot

Epson Users of SF Bay Area. (415) 467-2780.

Family Radio Forum - Oakland. (415) 562-5483. 300/1200/2400 8-N-1 24 hrs. Download pub. software & entire bible texts. Echo conferences on parenting, teens, singles, etc. Christian BBS for all. Sysop: Richard Yim

File Exchange. (415) 647-0505. 300/1200 8-N-1 24 hrs. MAC-based, mostly MAC but other types of computers welcome. Discuss problems & tips related to various programs.

Fremont Area Remote Terminal. (415) 791-2961. 300/1200/2400 24 hrs. MS-DOS & color computer downloads. Free!

Guideboard. (415) 864-3858. 300/1200/2400 24 hrs. Cabbie's Guide to SF. Where to go for restaurants, doctors, auto repair, etc. Resident Astrologer: Swami Tommy. Sysop: Dick Schwartz

Henari. (415) 855-9548. 300/1200/2400 BBS serving the Bay Area Jewish Community, linked to Israel via FidoNet.

MacCircles. (415) 484-4412. 2400 8-N-1 24 hrs. Files; support; congenial conversation. Sysop: Patricia O'Connor

MailCom. (415) 855-9548. Silicon Valley's 1st Mac BBS on FidoNet. Part of EchoMac & BayMac Network. 90 megs, FidoNet/USENET connections.

Med-Link. (415) 845-8649. 300/1200/2400 8-N-1 24 hrs. Medical, health, computer topics.

Model 100, 102, & 200 Support. (415) 939-1246. 300/1200 8-N-1 24 hrs. Ongoing support for Tandy/Radio Shack Model 100,102 & 200 owners.Int's support by mail, voice, & BBS.

Mouse-Trap. (415) 969-5486. 300/1200/2400. MS-DOS; files; messages; on-line games.

Nightengale. (415) 731-2422. 300/1200. A nursing BBS open to all. XT/PC clone MS-DOS.

Open Campus. (415) 895-0135. 300/1200/2400 24 hrs. GBBS/CMS sys. op. by San Leandro HS/Apple Eaters UG. 30 MB, 34 message bases; CMS intersys. E-mail. Library, downloads. Sysop: Robert Shayler

POPnet Berkeley. (415) 527-4510. Multi-line fun & games for all. Not free but cheap.

POPnet San Ramon. (415) 830-1191. Multi-line fun & games for all. Not free but cheap.

POPnet Walnut Creek. (415) 932-4263. Multi-line fun & games for all. Not free but cheap.

Program/Land. (415) 327-6197. 300/1200/2400 24 hrs. Pub. domain BBS - supports all telecommunication protocols. Alt. BBS - (415) 327-6198. Sysop: James Arnold

Recovery. (415) 621-5206. Help for alcoholism,

TURBO XT COMPLETE SYSTEM

- 4.77/10 MHz System Board
- 8088-2 CPU
- 640K on Board
- AT Style Case (3LED, Reset)
- 150 W Power Supply
- Mono Graphic Printer Card
- TTL Monitor
- Two 360K Drives
- AT Style Keyboard
- 1 Year Warranty

$595

Color System.............................$ 785
EGA System..............................$1035

AT 286 10 MHZ SYSTEM

- 8/10 MHz System Board
- 512K on Board (TO 1 MB)
- AT Case
- 200 W Power Supply
- 1.2 MB Floppy Drive
- WA2 FDD/HDD Controller
- Mono Graphic Printer Card
- TTL Monitor
- Enhanced Keyboard
- 1 Year Warranty

$869

Color System.............................$1049
EGA System..............................$1299

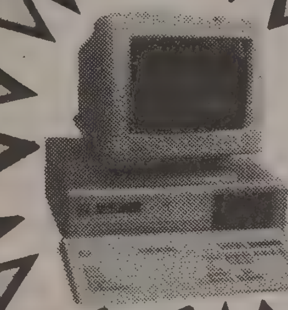
40 MB EGA 386 COMPLETE SYSTEM

- 80386 Microprocessor
- 32 Bit-16 MHz
- 1 MB Ram Installed
- 80387 Co-processor Socket
- 1.2 MB Floppy Drive
- 40 MB Hard Drive
- WA2 FDD/HDD Controller
- EGA Card
- EGA Monitor
- AT Case w/Key, LED, RESET
- 200 W Power Supply
- 101 Enhanced Keyboard

$2960

HARD/FLOPPY DRIVES

Seagate ST225 20MB w/CTR	$269
Seagate ST238 30MB w/CTR	$285
Seagate ST251 40 MB	$385
Seagate ST251-1 40 MB	$450
Seagate 4096 80 MB	$850
MiniScribe 40MB (3650)	$325
Teac 360K/1.2 MB	$79/$95
Fujitsu 360K/1.2 MB	$69/$87
1200 B Modem/Software	$ 95
2400 B Modem/Software	$159

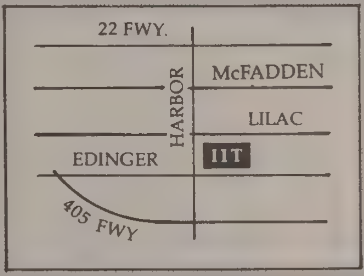


MONITORS

Sony EGA Monitor	$565
Samsung Amber w/Swivel	$ 74
Samsung CGA	$245
Samsung EGA	$360
Mitsubishi Multisync	$485
NEC Multisync	$545

PRINTERS

Panasonic 1081 i II	$185
Star NX1000	$195
Epson	CALL



IIT COMPUTER

16040 Harbor Blvd., Suite M
Fountain Valley, CA 92708

(714) 775-8126

Sales • Service • Repair

We Accept MC/Visa & Mailorder

DEALERS: Call for quantity pricing. Prices subject to change without notice.

A HIGH TECHNOLOGY FLEAMARKET AND MINISHOW FOR PERSONAL COMPUTING ENTHUSIASTS

COMPUTER SWAP™ MEETS

ABOUT THE COMPUTER SWAP

HUNDREDS OF SELLERS
Hundreds of dealers and manufacturers having price wars. Hundreds of personal sellers and exhibits. Millions of dollars worth of hardware, software, supplies, books and furniture. Many businesses will be liquidating inventories at a fraction of cost

BUY, SELL OR TRADE . . .
Every imaginable computer product from ICs to a complete computer system—new or used. Latest statistics of our buyers show that 98% made at least one purchase averaging $300

FREE SPACE FOR COMPUTER CLUBS
Free booth space to computer clubs as available. Call to reserve. Also, get the *Computer Swapper* magazine free for your club.

FREE COMPUTER SWAPPER ADS
Each paid attendee is entitled to a free 20 word classified ad in the *Computer Swapper*.

SELLING SPACES:
$75 to $300. Call for details. VISA & MasterCharge accepted.

CALL TO RESERVE YOUR SPACE NOW.

ADMISSION: $5

- DOOR PRIZES
- CONSIGNMENT TABLE
- THOUSANDS OF BUYERS
- USER GROUP DISCOUNTS

NEXT SWAP

L. A. COMPUTER SWAP

Saturday, April 23, 1988
10 a.m. to 5 p.m.

Los Angeles County
Fairgrounds, Building 5
Pomona, California

FUTURE SWAPS

SAN DIEGO COUNTY FAIRGROUNDS, DEL MAR
APRIL 9, 1988 (RESCHULED TO NOV. 19, 1988)

ORANGE COUNTY FAIRGROUNDS, COSTA MESA
MAY 14, 1988

L. A. COUNTY FAIRGROUNDS, POMONA
MAY 21, 1988

L. A. COUNTY FAIRGROUNDS, POMONA
JUNE 18, 1988

L. A. COUNTY FAIRGROUNDS, POMONA
JULY 16, 1988

LONG BEACH CONVENTION CENTER
JULY 23, 1988

ORANGE COUNTY FAIRGROUNDS, COSTA MESA
AUGUST 20, 1988

L. A. COUNTY FAIRGROUNDS, POMONA
AUGUST 27, 1988

L. A. COUNTY FAIRGROUNDS, POMONA
OCTOBER 8, 1988

LONG BEACH CONVENTION CENTER
OCTOBER 15, 1988

RK PRODUCTIONS, INC.
P.O. BOX 18906, SAN JOSE, CA 95158
(408) 978-7927 • 800-722-7927
IN CA 800-252-7927

ALL COMPONENTS
IC DISTRIBUTOR

MATH COPROCESSORS

8087-2 (8 MHz)	Call
8087-3 (5 MHz)	Call
8087-1 (10 MHz)	Call
80287-6 (6 MHz)	Call
80287-8 (8 MHz)	Call
80287-10 (10 MHz)	Call

EPROMS

2732	Call
2764	Call
27128	Call
27256	Call
27512	Call

DYNAMIC RAMS

1 Meg-120ns 1000Kx1	Call
1 Meg-100ns 1000Kx1	Call
41256-150ns 256Kx1	Call
41256-120ns 256Kx1	Call
41256-100ns 256Kx1	Call
4164-150ns 64Kx1	Call
4164-120ns 64Kx1	Call
4128-150ns 128Kx1	Call
4464-150ns 64Kx4	Call
4464-120ns 64Kx1	Call

CPU CHIPS

V20-8 (8 bit)	Call
V30-8 (16 bit)	Call

CALL (800) 367-7312

Prices shown for UPS COD Cash. Prices are subject to change.
SHIPPING & HANDLING: UPS Ground $6, UPS Air $7 (under 1 lb.).

ALL MERCHANDISE IS 100% GUARANTEED.

DISCOVER CALIFORNIA'S

COMPUTER SERVICE PROFESSIONALS

- IN HOUSE AND FIELD TECHNICAL SPECIALISTS
- VARIED MIX AND MATCH SERVICE PLANS
- STATEWIDE SERVICE AREA
- DEALER PROGRAMS
- TECHNICAL PHONE SUPPORT

Micro Computers • Laserjet Printers • Dot Matrix and Daisy Wheel Printers • Local Area Network • Video Display and Graphic Terminals • Line Printers

JOIN THE 100's OF SATISFIED CUSTOMERS TODAY!

ATS

AUTHORIZED TECHNICAL SERVICES

8901 LA CIENEGA BLVD.
INGLEWOOD, CA 90301

LOS ANGELES (213) 568-8862
ORANGE COUNTY (714) 937-0332
OAKLAND (415) 638-4449
SACRAMENTO (916) 923-2944
SAN JOSE (408) 970-9860

NCSN
MEMBER OF
NATIONAL COMPUTER SERVICE NETWORK

1-800-451-4057

SEE US AT THE WEST COAST COMPUTER FAIRE BOOTH #500

Calsonic. (714) 830-5958. Password=CII. Use real names. Sysop: Kerry Williams

Dead Board. (717) 677-9573. Sysop: Captain Trips

805

Success BBS. (805) 238-7359. 300/1200 24 hrs. Sysop: Larry Sarver

818

Fox Hole. (818) 332-3073. 300/1200 24 hrs. Home of Pervert's Palace. On-line games etc. Write for info: P.O. Box 1071, Walnut, CA 91788. Sysop: Dr. Foxe, Ultamacy

Dial-Your-Match. (818) 888-6688. Canoga Park.

Dial-Your-Match. (818) 845-5325. Burbank.

Dial-Your-Match. (818) 247-6343. Glendale.

Dial-Your-Match. (818) 954-0790. Burbank.

Dial-Your-Match. (818) 506-6300. N. Hollywood.

DELOS. (818) 242-2365. 300/1200 24 hrs. Lo-cost access or free ltd. use. Serving the Gay Community. 10 lines for chatting! Library & many public boards.

DELOS. (818) 242-1410. 2400 24 hrs. Lo-cost access or free ltd. use. Serving the Gay Community. 10 lines for chatting! Library & many public boards.

Dial-Your-Match #1. (818) 842-6900. 300/1200 24 hrs. The original dating BBS on-line since 1981. Fill out a personalized questionnaire & join the fun!

Fantasy Plaza. (818) 840-8066. Burbank.

Hard Ball PC Board. (818) 713-0420. 1200/2400 8-N-1 24 hrs. Programming conference specializing in Pascal. Huge P/D & Shareware Filebase for PC & compatibles.

LEGACY - The Law Network. (818) 990-7600. 1200 8-N-1 24 hrs. Info on Computer Law, Entertainment Law, Comms. Law. Pro bono conference for free legal advice to non-lawyers. Sysop: Richard H. Kohn, Esq.

Lynzie's Motherboard. (818) 508-6482. 300/1200/2400 8-N-1 24 hrs. Multi-interest. Social events for users. If you're looking for a discriminating BBS, this is the place to be. Sysop: Lynzie Flynn

Mysteria. (818) 353-8891. 300/1200/2400. Occult & general text files, CP/M, turbo Pascal. Sysop: Phil Hansford

Oracle. (818) 509-9681. 300/1200/2400 8-N-1 24 hrs. 9 phone lines. System password MICROTIMES for higher access. Free demo version of Oracomm BBS software. Sysop: Gary Young

Party Line. (818) 842-3322. 300/1200 24 hrs.11 phones. The most exciting multi-user chat system in Cal.! Also, integrated matching system, up-download, chat link sys.

The Board With No Name. (818) 785-3340. 300/1200. A gay-oriented BBS. No hourly fees; no time limit w/ paid access. 16 lines.

The Board With No Name. (818) 785-6428. 2400. A gay-oriented BBS. No hourly fees; no time limit w/ paid access. 9 lines.

The Ledge PC Board. (818) 352-3620. 200/2400/9600/9200. All systems welcome, full support for IBM PC/AT compatibles.

The Software Bank. (818) 993-5516. 300 to 9600. Atari ST only. 65 megs. Node #95 of FNET. Exchg. messages & files w/users on other FNET BBS nationwide thru our network. Sysop: The Software Bank

Dial-Your-Match. (818) 785-3498. Van Nuys.

Party & Chat Line. (818) 842-3322. Burbank.

916

Dial-Your-Match. (916) 275-1265. Redding:

24th Street Exchange. (916) 451-7179. 300/1200/2400 8-N-1 24 hrs. Opus-based system. Free access. Lge. selection pub. domain files for IBM & compatibles. Special interest areas. Sysop: Don Kuhwarth/Laura Stua

ASSOCIATIONS

Realtor Microcomputer UG (RUG). Meetings: 4th Thurs. 7 PM Pasadena BOR, cnr. Orange Grove & Los Robles, Pasadena, CA.

Computer Professionals for Social Responsibility. Meetings: Most third Wed. 7:30 PM UCLA. CPSRLS-focuses on computer system risk and reliability and on privacy and civil liberties issues.

Atari Computer Assoc. of Orange County (ACAOC). Meetings: 2nd. Sun. 1 PM Rancho Santiago College, Phys Ed. Bldg., Rm. W-101,Santa Ana.

California Educational Computing Consortium CCCE. For information write Herb Garrett, Long Beach City College, 4901 E. Carson Street, Long Beach, CA 90808.

USER GROUPS

AMIGA

Amiga Friends. Meetings: 3rd Sun. Rancho Santiago

MicroTimes Classifieds WORK!

Call (213) 467-7878 for information

NEW
Power to the MAX!!

FCC & UL Approved

E101506 LR65066-1

100% Computerized Functional Test
100% Dynamic Burn-In
1 Year Warranty

250W for 386
200W AT
200W Baby AT

DEALERS:
Call for Latest Prices

HIGH POWER ELECTRONIC CO., LTD.
"Specialists in AT Power Supplies"

1224 S. Garfield #204
Alhambra, CA 91801
(818) 284-2385

SATURDAY
APRIL 30
COMPUTER BARGAIN SHOW

SAN FERNANDO VALLEY
Computer Swap

EVERY ITEM ON DISPLAY IS AVAILABLE FOR IMMEDIATE PURCHASE AT BARGAIN PRICES

CSUN North Campus
Formerly Devonshire Downs
NORTHRIDGE, CA
18000 Devonshire Blvd. between Lindley & Zelzah

10 A.M. to 5 P.M.

Admission $5 Children Under 12 FREE For Info. Call in CA 800-433-7469

A MICROSHOWS PRODUCTION

Subscribe to MicroTimes

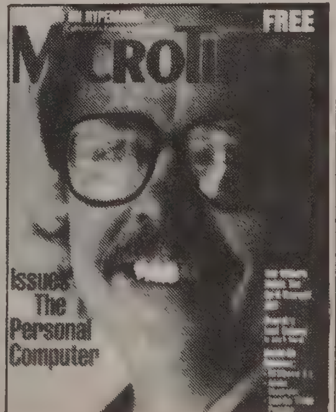
And you'll be the winner in more ways than one! You'll get new product updates, software and hardware reviews, industry news and information, user group info, and so much more.

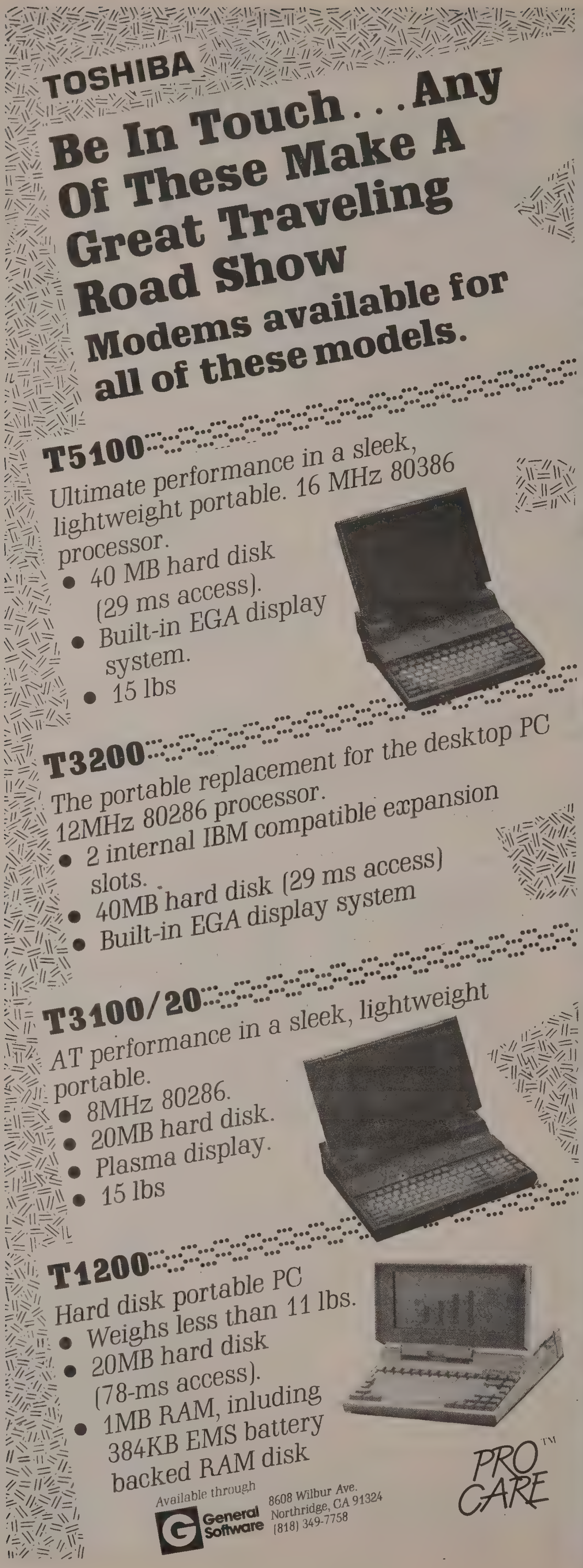
In MicroTimes, you'll be able to find all the products and services you need to keep computing from local computer stores and businesses.

The "Home-Field Advantage." It's yours when you subscribe to MicroTimes!

Company Name ____________________
Name ____________________
Address ____________________
City ____________ State ________ Zip ________
Inside U.S. ☐ Bay Area Edition ☐ L.A. Edition
☐ 1st Class $50/12 issues
☐ 3rd Class $24/12 issues
(Allow 3 to 4 weeks for delivery)
In Mexico & Canada $40
Overseas (surface mail) $40
☐ I have enclosed a check for $ ________
☐ Please charge $ ________ to Visa/MC
# ____________________ Exp. ________
Card Name ____________________
Address ____________________
City ____________ State ________ Zip ________
Signature ____________________

Mail to: MicroTimes Subscriptions
5951 Canning Street
Oakland, CA 94609
(415) 652 3810




TOSHIBA

Be In Touch . . . Any Of These Make A Great Traveling Road Show

Modems available for all of these models.

T5100

Ultimate performance in a sleek, lightweight portable. 16 MHz 80386 processor.

- 40 MB hard disk (29 ms access).
- Built-in EGA display system.
- 15 lbs

T3200

The portable replacement for the desktop PC 12MHz 80286 processor.

- 2 internal IBM compatible expansion slots.
- 40MB hard disk (29 ms access)
- Built-in EGA display system

T3100/20

AT performance in a sleek, lightweight portable.

- 8MHz 80286.
- 20MB hard disk.
- Plasma display.
- 15 lbs

T1200

Hard disk portable PC

- Weighs less than 11 lbs.
- 20MB hard disk (78-ms access).
- 1MB RAM, inluding 384KB EMS battery backed RAM disk

Available through

General Software

8608 Wilbur Ave.
Northridge, CA 91324
(818) 349-7758

PRO CARE™

College, Rm R-124, 17th & Bristol, Santa Ana. Call for current meeting info: (714) 775-7237 (24 hrs.) or write: P.O. Box 4186, Huntington Beach, CA 92605.

Bits & Pieces Amiga Group of Anaheim. Meetings: each Tues. 6:30-10 PM 1130-A North Kraemer Blvd., Anaheim, CA. DOS Classes, tech. help & more. BBS: (714) 630-8897.

Long Beach Amiga UG. Meetings: 3rd Sun. 1-4 PM Mid-Cities Nat'l Bank, NE corner Lakewood & Artesian, Bellflower.

Pacific Computer Club. Meetings: 2nd Thurs. 7 PM 391 S. Madison, Pasadena, CA.

South County PC Users Group. Meetings: 3rd Sat. 9 AM American Savings, 23688 El Toro Rd., El Toro, CA.

AMSTRAD

AMSTRAD User Group, U.S.A. Meetings: 4th Tues. 7 PM & 8 PM Venice High School, 13000 Venice Blvd. Since Sears dropped the PCW8256, group formed so users/owners can support each other.

ATARI

Santa Clara Valley Atari Computer Enthusiasts (SCVACE). Meetings: 1st Thurs. 7PM Mint Canyon Moose Lodge, 18000 W. Sierra Hwy, Canyon Country. 8-bit group. Atari ST special group now forming.

South Bay Atari ST Computer Club. Meetings: last Mon. 8 PM 15331 Praire Ave. Lawndale.

Atari Computer Association Of Orange County. Meetings: 2nd Sun. Rancho Santiago College, Room W101, Santa Ana. BBS: (714) 540-7378.

COMMODORE

OKOK Computer Users Group. Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

Bits & Pieces Commodore Computer Group of Anaheim. Meetings: each Tues 6:30 PM 1130-A N. Kraemer Blvd. (Kraemer & La Palma), Anaheim. Offers public domain software, demonstrations, interactive training on your computer.. $33 annual dues.

Commodore Users & Buffs Enthusiasts (C.U.B.E.). Meetings: 1st & 3rd Tues. 4:30 Mid-Cities Nat'l Bank, NE corner Lakewood & Artesia, Bellflower.

Commodore 64 Software Users Group. For new Commodore owners. One on one help. Call (714) 531-2977 for info.

Nebula 6. Call BBS for more info & online glance at what group offers. BBS (714) 595-6577 300/1200/2400. Write for info: P.O. Box 1071, Walnut, CA 91788.

Orange County Commodore Technical Users Group (C-TUG). Meetings: 4th Sun. 10:30 AM Mercury Savings & Loan, 4th & Newport, Tustin, CA. Newsletter; 2 BBS's; door prizes; SIGs in Comal; DOS protec- tion; data bases; wpros; & BASIC. Custom software, ROM chips.

South County PC Users Group. Meetings: 3rd Sat. 9 AM Great American Savings, 23688 El Toro Rd., El Toro, CA.

South Orange Commodore Klub (SOCK).

Meetings: 1st Wed. 7 PM Laventhol & Horwath, Exec. Conf. Rm.7th Fl., 3699 Wilshire Blvd., LA, CA.

Southern California K-Man Users Group.

Meetings: 1st Wed. 7PM Laventhol & Horwath, Executive Conference Room, Seventh Floor. 3699 Wilshire Blvd., Los Angeles.**Pacific Computer Club.** Meetings: 2nd Thurs. 7 PM 391 S. Madison, Pasadena, CA.

EPSON

San Fernando Valley Epson QX User Group. Meetings: 3rd Tues. 7 PM Fallbrook Sq. Comm. Rm., Fallbroook Mall, 6633 Fallbrook Ave.Canoga Park.

IBM AND COMPATIBLES

OKOK Computer Users Group. Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

Bits & Pieces Amiga Group of Anaheim. Meetings: 1st & 3rd Sat. 10 AM—2 PM 1130-A North

SHOP
MICROTIMES
FOR
THE BEST
COMPUTER
VALUES

Kraemer Blvd., Anaheim, CA. Sponsored by Transnational Electronics. BBS: (714) 630-8897.

Kern Independent User Group. Meetings: Write Kern Independent PC User Group, P.O. Box 2780, Bakersfield, CA 93303.

Long Beach IBM Users Group. Meetings: 3rd Wed. 7 PM Woodruff Medical Plaza, 3816 Woodruff Ave., Room A, Long Beach.

Pacific Computer Club. Meetings: 2nd Thurs. 7PM 391 S. Madison, Pasadena, CA.

Pasadena IBM Users' Group. Meetings: 3rd. Wed. CalTech, Bridge Bldg., Rm. 201.

QUICK & EASY Mailmaster User Forum. Meetings: monthly LA/Airport area. Users interested in maximizing performance of Quick & Easy.

South Bay Users Group (SBUG). Meetings: 1st Sun. Mercury Savings, Long Beach, CA.

Technical Users Group (TUG-NET). Meetings: Call for info (818) 882-6045. BBS (818) 882-6045.

The IBM & Compatibles User Group (ICUG). Meetings: 4th Thurs. 6:30 PM or 7:30 CAL Lutheran Univ., 60 W. Olsen Rd., Thousand Oaks. Group is 5 yrs. old & has 150 members Meetings begin at 6:30 for beginners, 7:30 regular members.

Calsonic PC Club. Meetings: 1st Tues. 5:15 PM 9 Holland, Irvine, CA.

PC*UG Computer Club. For Hughes Aircraft Employees. Call (213) 334-3422.

TRS Nybblers. Meetings: 1st Wed. 7 PM 2006 W. Magnolia, Burbank. Supports MS-DOS, CP/M, IBM or IBM clones.

Orange Coast IBM PC User Group. Meetings: last Sat. 9 AM Science Hall, Orange Coast College, Costa Mesa, CA.

KAYPRO

OKOK Computer Users Group. Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

LEADING EDGE

Leading Edge Computer User Group of Ventura County. Meetings: 2nd. Sat. 10 AM Camarillo Library, 3100 Ponderosa Dr., Camarillo, CA. Lectures on hard/floppy disk usage; program demos; beginner classes. Single: $20, couple $25.

NETWARE

Netware User Group Los Angeles (LANET). Meetings: 2nd. Wed. Welcomes consultants, CPA's, dealers, & users interested in sharing information on NETWARE & related products.

Orange County Network Users Group (OCNET). Meetings: 2nd Tues. Wyle Labs, Irvine CA. Open to users, consultants, all interested in NETWARE.

OPEN SYSTEMS

Open Systems Accounting, So. Cal Users Group (OSASCUG). Meetings: 4th Wed. Wyle Labs, Irvine, CA. Users of Open Systems, Altos Accountant, CADO, & Rexon accounting software. Open to end users, dealers and consultants.

OSAS Systems Users Group Los Angeles (OSASUGLA).

Meetings: 1st Wed. Welcomes consultants, CPA's, dealers, users & Ql's interested in sharing information on OSAS & related products.

OSBORNE

OKOK Computer Users Group. Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

TANDY/RADIO SHACK

Los Angeles - Wilshire Color Computer Users' Group. Meetings: 2nd Sat. 12:30-5:30 PM Felipe de Neve Library's Comm. rm., 2820 W. 6th St., LA, CA.

South Bay Users Group (SBUG). Meetings: 3rd. Fri. Mercury Savings, 22939 Hawthorne Blvd., Torrance, CA.

TEXAS INSTRUMENTS

San Fernando Valley TI-99/4A User Group. Meetings: 2nd Wed. 7:30 PM Doctor's Conf. Rm., Sherman Oaks Hospital, 4929 Van Nuys Blvd. Call for info: (818) 248-9558.

SFV 99ers. Write: 2823 Sanborne Ave., La Crecenta, CA 91214.

TI Riverside UG. Meetings: Call for info: (213) 545-9581 or (213) 551-9454.

TI Users Group of Orange County. Meetings: 3rd Thurs. Peek Funeral Home, 7801 Bolsa Ave., Westminister. Call 633-7317.

TI Professional. Call (213) 397-9668.

TIMEX/SINCLAIR

Timex-Sinclair Users Group. Meetings: 3rd Mon. 7 PM 11828 Jefferson Blvd., Culver City, CA.

The Spotlight on California Computer News - MicroTimes

TOSHIBA LAPTOPS

T5100 - 16MHz 80386 processor, 40mb harddisk, Built-in EGA display system, 15 lbs	**$4760.00**
T3200 - 12MHz 80286 processor, 2 internal IBM compatible expansion slots, 40MB hard disk, Built-in EGA display system	**$3740.00**
T3100/20 - 8MHz 80286, 20MB hard disk, plasma display, 15 lbs	**$2900.00**
T1200 - 20MB hard disk (78-ms access), 1MB RAM, including 384KB EMS battery backed RAM disk	**$2380.00**
T1100 - Weighs less than 10 lbs., two 720KB 3.5" diskette drives, Supertwist LCD	**$1430.00**
T1000 - Weighs only 6.4 lbs, 512 KB standard memory, MS-DOS in ROM	**$750.00**

TOSHIBA PRINTERS

P351C Full color,wide carriage, 24-pin	**$1090.00**
P351SX High speed 360 CPS, 24-pin, Letter quality and high density graphics	**$950.00**
341 S/L Wide carriage, 24-pin	**$575.00**
321 S/L Fast, versatile 24-pin dot matrix	**$475.00**

Authorized Toshiba Printer Repairs

DATAFLEX

DataBase Development Language

Vertical market solutions offered for Retail Point of Sale, MRP, Legal Billing, Inventory Control. Real Estate Partnership Syndication, Real Estate Propery Management, Wholesale Distribution, Credit Card Order Entry, Produce Wholesale Distribution, Insurance Policy Issuing & Invoicing

Full Development Language:

Single User	**$347.50**
Multi User	**$625.00**

Runtime:

Single User	**$100.00**
Multi User	**$150.00**

(Call for Unix and VMS Versions)

PRINCETON

Ultrasync	**$525.00**
Max 12	**$125.00**

NOVELL

NOVELL Network Advance Netware 286	**$1500.00**
TIGAN Ethernet	**$325.00**
STANDARD MICROSYSTEMS Arcnet Card	**$150.00**
TIARA Active 8-Connector Hub	**$400.00**
Passive 4-Connector Hub	**$35.00**

HUNTER

Hunter 286 Monochrome Workstation *6/10 MegaHertz switchable, 640k, Enhanced AT style keyboard, 360K floppy to boot workstation.*	**$1185.00**
Hunter 286 Ultrasync Color Workstation *6/10 MegaHertz switchable, 640K, Enhanced AT style keyboard, 360K floppy to boot workstation, Princeton Ultrasync Color Monitor.*	**$1585.00**
NOVELL Compatible Fileserver 286B	**Call for configuration quote**

Call for Installation, Service & Training.

AST RESEARCH INC.

AST Premium/286 Model 80	**$1625.00**
AST Premium/286 Model 140	**$2400.00**

PCS BUSINESS CENTER

8606 Wilbur Ave., Northridge, CA 91324
24672 San Juan Ave., Dana Point, CA 92629

Full Authorized Service and Support: Okidata, Toshiba, Data General, Novell, IBM, Compaq

COD Prices - Purchase Orders
Corporate Accounts Welcome

(213) 578 -7178
Charles Goodding

(818) 885-7751
Three Tyler

(714) 248-1213
Rick Olson

CLASSIFIEDS

EMPLOYMENT OFFERED

WordPerfect Instructor/technical writer. College teaching experience. Physics Phi Beta Kappa. POB 5153, Berkeley 94705.

EXPERIENCED TELEMARKETING SALESPERSON -for computer systems and parts, salary commensurate with experience. Call (714)898-2124.

Advertising Sales positions are available at MICROTIMES magazine. Interested career oriented individuals with previous sales experience should send resumes to: Joe Amadeo, Associate Publisher, 5951 Canning St., Oakland, CA 94609.

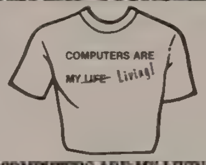
EQUIPMENT

Wyse WY60-02-01 with AT style keyboard. -Amber color. Excellent condition. $350(list $700). (415)751-7859.

XTClone,, 640K, 2floppies, Monographics, Citizen MSP-10 printer, monitor arm, vertical stand, $700firm, Richard, (714)261-8891, Irvine.

FOR SALE

DISPLAY YOURSELF!



"COMPUTERS ARE MY LIVING"

Printed in white and red.
On black or gray t-shirts, $11.50 ea.
On gray sweatshirts, $20.00 ea.
Specify color/size (S, M, L, XL).
Add $1.00 per item shipping.
Allow 4-6 weeks for delivery.
Checks or money orders to:

INTERMEDIA
P.O. Box 27670
Los Angeles, CA 90027

HARDWARE FOR SALE

Toshiba 321 Printer. High quality print. A Work Machine. Like new. $325/BO. (415)652-2226.

Portable 386/16MHz, 1 MB Ram, Paradise 480 graphics, 1.2 MBF, 40 MB/28msHD, $2500. (408)395-4183.

Wang keyboard & monitor -model PM-004L $500 or best offer (408)262-5504.

HARDWARE FOR SALE

Repair Your Home Or Office Computer And Printer Easily -You can once you know the causes of a particular problem. Unique, easy to follow repair flowcharts on your computer, printer, disk drives, keyboard, and monitor tell you the causes of your computer problems and what to check to correct them. Good for all computers and printers. No repair experience necessary. Know what to do when your computer or printer breaks down. Receive a free guide to locating and replacing defective memory chips with your order. $12.95 for the complete set of flowcharts plus the free memory chip guide. Computer Care, 3669 Grand Avenue, Oakland, CA 94610.

Morrow MD3, CP/M, Transtar 130 Printer. Lots of software. $400/B.O. (415)841-9951.

Computers Bought & Sold - California Computer Exchange, (415) 552-0920 or (800) 652-1532.

IBM Quietwriter Printer -Includes user's manual, tractor feed, courier font. Good condition. $750. (415)956-5099.

ALTOS 823-586T COMPUTER SYSTEM, Okidata P93 Auto Printer, Texas Instrument P810 Auto Printer, 3 Televideo Terminals Model 955. All equipment approx. 19 months old. To be sold "as is, where is" to highest bidder. (415)972-8714 for info.

COMPAQ 286 COMPUTER W/ MEMORY UPGRADE AND TERMINAL, IBM Proprinter, KIMTRON workstation, 2 Dual 20 Megabyte Hard Disks. 2 years old. To be sold "as is, where is" to highest bidder. (415)972-8714 for info.

IBM PS-II Model 50 -Toshiba 321-SL printer, Wordperfect 4.2, X-Tree, more. Like new! $3,300. (415) 885-6343.

Ehman 800K MacDrive -External 3 1/2". Never used. $175.00(lists $299). (415)387-1424.

TRS80 Model 4P incl. Montezuma CPM, extra 64K ram. You need this machine. $400. (415)961-8599.

PCJR Accessories second drive, memory expansion, mouse, modems, joy sticks and more. Pick up or mail order. Phone (415) 431-8399.

Northstar Horizon, 2 floppy drives, wood case, no terminal, excellent condition. Bruce, (415) 658-9545, leave message.

HARDWARE FOR SALE

POINTLINE CADD SYSTEM 35% OFF -2D, 3D solids color rendering BOM more hardware training. (415)441-4992.

Lanier Dedicated Word Processor Model LTE-24C, Printer, Printing Supplies, Program Disks, Operator's Manual, Audio Training Manual, Working Condition $600 or Best Offer. (415)786-3401.

SERVICES

WE SERVICE and SUPPORT ALL DOS & CP/M MACHINES

WILKINSON SOFTWARE
714-894-3216

EAGLE Technical Support
714-895-1759
If you own an Eagle system, you should call us for information !
Free Telephone Support
Parts & Service Available

Rent-A-Writer's Professional Technical Writers -will come to your site or work independently to document all your hardware, software and temporary writing needs. Call (415) 841-8003.

Warren Sirota Associates - 7 years of experience programming, teaching, and reviewing database systems means appropriate, reliable, and efficient satisfaction of your database needs. MS mathematics, references available. (415) 482-3979.

User Documentation Service -(415) 586-4577 makes your notes into a professional user-friendly manual. Free estimate.

SERVICES

Computer Mailing Lists Computer dealers, user groups, publications, end users and more. Send for free catalog. Buffalo Enterprises, Po Box 29 Sebastopol, Ca 95472 (707) 823-3239.

Laser Printer Users - don't throw away your used toner cartridges! Save literally thousands of dollars over the life of your printer!!! Recharge only $40!!! Call Laser Cartridge Service now: (818) 794-5561 or (213) 545-2325.

Computer Repair and Installation -IBM, Apple, Compaque. Call Bob (213)809-6970.

Printer Care -Factory authorized warranty service center. Citizen, Star, Towa. Service, Parts & accessories. (415) 471-2720.

Free AutoCad Training -for employees of A/E firms. Call (415) 543-3383 for qualifications.

CAD DIGITIZING -Convert all your old board drawings into computer generated drawings. For info. call (213)436-6175.

Save Money! -Lazer cartridges recharged 1/2 price of a new cartridge. Satisfaction guaranteed. Laser Cartridge Service. (408) 996-3776.

Computer Mailing Lists Computer dealers, user groups, publications, end users and more. Send for free catalog. Buffalo Enterprises, Po Box 29 Sebastopol, Ca 95472 (707) 823-3239.

Macintosh Consulting, Training & Support -fully integrated data base, custom built to your business needs. Professional Quality & personal service. Pacific Micro Design, (415) 475-7047.

SERVICES

Consulting -Precision Computer Consulting, an established South Bay company is now offering after hours training and consulting for the IBM PC. Lotus 1-2-3, DbaseIII, MS-DOS, Multimate, MSWord, Crosstalk, Local area networks and other IBM Compatible S/W, H/W supported. Call 375-5804 for more information.

SOFTWARE FOR SALE

Hercules Graphics Source Code. These routines are all you need to draw graphics on Hercules compatible mono cards using C or Pascal. Send $19.95 to: Rheingans Computer Services, P.O. Box 3092, Corona, CA 91718. Specify language.

SOFTWARE FOR SALE

CYFER, a program for making and breaking secret communications is the most powerful cipher breaking tool available, with sophisticated methods for solving all types of ciphers-substitution, transposition, polyalphabetics, Playfair. Unbeatable as an educational hobby or practical utility. Tutorial manual included. Only $39.50. Gypsy Services, 3861 Mentone #10, Culver City, CA 90232.

Programs For Microsoft Windows -Spelling Checker; $89.95, Typing Teacher; $34.95, Windows programmer's reference manual; $19.95, Programmer's starter kit; $49.95, and more! Send SASE for details. California residents add 7% tax. Kwan Technologies, Box 64160, Sunnyvale, California 94086-4160.

Sales

Telephone Sales Pros

Are you an outgoing, motivated individual looking to apply your talents in a rewarding position?

We are a rapidly growing five-year-old company looking for people to sell major-brand computer and business electronics products from our convenient Van Nuys location.

If your background is sales and you've got excellent phone skills and some knowledge of computers, then you're just the person we're looking for.

In return for your enthusiasm and experience, High Technology Distributing Company offers an attractive commission program, excellent benefits package, and fast-moving products to sell.

To schedule an interview, please call Ms. Tom at (818) 994-8001 between 10 am and 5 pm. EOE.

HIGH TECHNOLOGY DISTRIBUTING COMPANY, INC.

To Place A Classified Ad

Free Ads: Private individuals may have one free classified ad of 15 words or less,* additional words are 50¢ per word. A phone number, including area code, counts as one word. If you want your ad to run more than once, all subsequent printings will be charged at one half business rates.

Business Ads: Rates are $15 for 15 words or less. 50¢ for each additional word. Again, your phone number counts as one word.

To Order By Mail: Send coupon to:
MicroTimes Classifieds
1800 Highland Ave., #220
Hollywood, CA 90028

To Order By Phone with Visa or MasterCard only. Call: **(213) 467-7878**
Classified Deadline, June Issue: April 18, noon

*All Categories EXCEPT Personal.

For a mere fraction of your paycheck—buy, sell, trade, whatever. Just $15 for the first 15 words plus 50 cents for each additional word, per issue.

Category

☐ Employment Offered
☐ Hardware For Sale
☐ Software For Sale
☐ Employment Wanted
☐ Office Space
☐ Video
☐ Personal
☐ Wanted
☐ Equipment
☐ Services
☐ Will Trade

Cost of ad ________ X number of issues to run ________ = Amount Enclosed ________

Send Check ☐ Money Order ☐
Visa ☐ or MasterCard ☐ Exp. Date ________
Account # ________
Signature ________

Aovertisers Name ________
Street Address ________
City ________ State ____ Zip ____
Phone (____) ________

Send To: MICROTIMES Classifieds
1800 N. Highland Ave. #220
Hollywood California 90028

SOFTWARE FOR SALE

SOFTWARE FOR SALE

RUN COLOR GAMES

on your Mono Monitor

with DO-COLOR $29.95

Tax $1.80
S/H $3.00

— Uses Hercules-type Video Boards —
— Runs even Self-Booting Games —
examples: Certificate Maker, Pac Man, F-15

WILKINSON SOFTWARE
6400 Westminster Blvd., Ste. 115, Westminster, CA 92683
714-894-3216

WANTED

Old Style MicroSoft Serial Mouse Wanted -new or used. Will pay premium. Call (415) 683-2730.

. . . so your friendly neighborhood store's always out of MicroTimes? Subscribe! U.S.: $24. Mexico and Canada: $40. Overseas: $40. (surface mail $160. (air mail).

MicroTimes Subscriptions
5951 Canning St.
Oakland, CA 94609

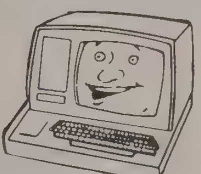
READ

California's Computer Magazine

MICROTIMES™

MICROTIMES Classifieds Work!

GOLDEN GATE SHOWS & MICROTIMES PRESENT THE FOLLOWING



COMPUTER SHOWS & SALES

Saturday 4/2
San Diego Computer Show & Sale
San Diego Scottish Rite Center
I-8 to Mission Center/Texas St. exit,
left on Camino del Rio South

Saturday 4/16
Ventura Computer Show & Sale
Ventura County Fairgrounds
(Going N. exit California St. off Hwy 101
Going S. exit Ventura Ave. off Hwy 101)

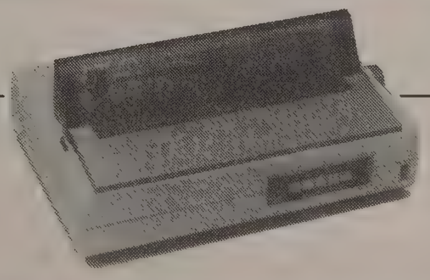
Coming May 14 & 15
Amiga-Commodore Computer Users Show & Sale
at the
Santa Clara Convention Center.
Call for details!

TREMENDOUS SAVINGS

☎ **GOLDEN GATE SHOWS**
CALL FOR INFO: (415) 388-8893

ALL SHOWS 10-5PM
Admission $5.00
Kids 12 & under FREE

C.ITOH 715 Reliant and 815 Supra



715 Reliant

- PC Magazine-Editor's Choice
- 24-wire dot matrix, wide carriage
- Color and monochrome print
- 300 cps draft - 100 cps LQ
- Parallel and serial interface
- 16 character LCD display
- Auto paper loading, push/pull tractor, bottom feed
- 32K buffer, 51 dBA

Call for Price

815 Supra

- 400 cps draft - 162 cps LQ
- 24-wire dot matrix, 15.5″ width
- Serial and parallel interface
- Emulates IBM ProPrinter, XL, Toshiba P351, Qume Sprint II
- 42K buffer, 51 dBA
- Push tractor, friction top, rear and bottom feed
- Copy + function handles 6-part forms

Call for Price

Cypress Distributing Company®

560 Lincoln Avenue
San Jose, CA 95126
(408) 297-9800

22186 Rim Pointe
El Torro, CA 92630
(714) 770-7244

2670 Truxel Road
Sacramento, CA 95833
(916) 646-1955

Quimax Emerson Century Data Systems Packard Bell Personal Computer Products Panasonic Seikosha Fujitsu Moniterm Star Micronics Mitsubishi Rutishauser Canon

(213) 675-0115
FAX (213) 675-5350

COMPUCAL, Inc.

13400 S. Prairie Avenue
Hawthorne, CA 90250

SYSTEMS

IBM

IBM MODEL 25 SYSTEM	$1075
IBM MODEL 30 1DR, 20MB HD	1750
IBM MODEL 50 1DR, 20MB HD	2775
IBM MODEL 60/80	CALL
IBM PROPRINTER II/XL/X24	CALL
QUIETWRITER II/III PRINTER	CALL

APPLE	CALL
MAC SE/PLUS/II	CALL
IMAGEWRITER II	CALL

COMPAQ

COMPAQ 386 20MHz (NEW)	CALL
COMPAQ 286 MODEL 1/20/40 FROM	1995
COMPAQ PORT III, 20MHz	CALL
COMPAQ PORTABLE II MODEL 4	2695
COMPAQ PORTABLE II MODEL 2	2250

386 MACHINES

ALR 386	$CALL
AVAREX 386, 16 MHz	1995
ACER 386	CALL

AST

AST PREMIUM 286 MOD. 90/120/140/170	$CALL
AST TURBOLASER EL/PS PRINTER	CALL
AST 286 80/140	1499/CALL
AST 386 340/390 In Stock	CALL

NEC

NEC MULTISPEED 640K 2DR	1299
NEC MULTISPEED EL SYSTEM (NEW)	1650
NEC MULTISYNC /PLUS/XL	CALL

TOSHIBA

TOSHIBA 3100 W/20MB, SYSTEM	$2895
TOSHIBA T1000/T1200, SYSTEM	CALL
TOSHIBA P321SL/P321SL/P351-2	495/CALL
TOSHIBA 386	CALL
T5100	5595
ZENITH Z-181/Z-183	$CALL
XT COMPATIBLE	FROM 495
AT COMPATIBLE	FROM 1095
SAMSUNG AT 1MB RAM 1.2MB DR	1299
MULTITECH ACCEL 900/700	CALL

PRINTERS

EPSON

EPSON FX86e/286e	$330/465
EPSON EX800/1000	425/525
EPSON LQ850/1050	CALL
EPSON LX800/LQ2500	235/999
EPSON LQ500	$389

OKIDATA

OKIDATA 192+/193+	350/499
OKIDATA 292/293 W/MODULE	525/650
OKIDATA 294/393	CALL
LASERLINE 6 128K	1575

HEWLETT PACKARD

HP LASER JET SERIES II, 512K	$CALL
HP SCANJET, FLAT BED SCANNER	CALL

CITIZEN

CITIZEN 120D/180D	$199
CITIZEN MSP 15E	375
CITIZEN MSP 40/45/55	CALL
CITIZEN TRIBUTE 224	699
OTC PRINTERS 750/850 CPS	CALL
CITIZEN OVERTURE 100 LASER PRINTER	CALL

MONITORS/PERIPHERALS

IBM 12" VGA MONITOR (COLOR)	$575
IBM 16" VGA MONITOR (COLOR)	1295
AMDEK 310A 12", AMBER	150
AMDEK 410 AMBER 12"	185
AMDEK 722 COLOR MONITOR	495
SAMSUNG EGA MONITOR	399
THOMPSON ULTRASCAN EGA	550
THOMPSON 14" MONO/MONITOR	175
PRINCETON MAX12/HX12	155/465
PRINCETON EGA HX-12E	525
MODEMS 1200/2400 INT/EXT	CALL
HARD CARD PLUS 20MB/30MB	CALL

SPECIAL: Complete system, 12 MHz, 286 machine, 40 Meg hard drive, 1 Meg RAM, and word processor

$2395

Mono/CGA/EGA Monitors
Seagate 20/30/40MB Drives w/controller

90 Days Financing...
No Payments
No Interest

Topaz Medical/Insurance Billing. Complete System. CALL

***Prices subject to change without notice.**
* Deliveries May Be Subject to Additional Charge.

SATURDAY
APRIL 9

COMPUTER BARGAIN SHOW

SAN FERNANDO VALLEY
Computer Swap

EVERY ITEM ON DISPLAY IS AVAILABLE FOR IMMEDIATE PURCHASE AT BARGAIN PRICES

CSUN North Campus
Formerly Devonshire Downs

NORTHRIDGE, CA
18000 Devonshire Blvd. between Lindley & Zelzah

10 A.M. to 5 P.M.

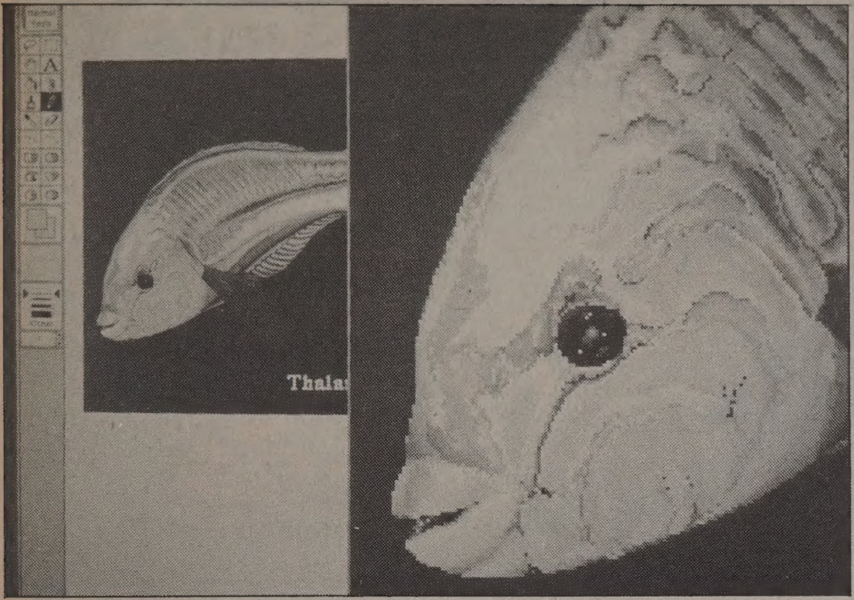
Admission $5 Children Under 12 FREE For Info. Call in CA 800-433-7469

A MICROSHOWS PRODUCTION

ADVERTISER'S INDEX

2001 Sales Inc. 14
Adventure Computers 63
All Components 101
AMAX Applied Technology Inc. 53
Americal Group 29
American Digital 41
AJ Computer Supplies 82
Atlantic Computer Products 61
ATS (Authorized Technical Services 102
Binary Computer Corp. "B.C.C." 5
California Microstar 7
Clone Masters 64
Commercial Typewriter 32
Compco 30
Compucal 108
Compudynamics 15
Computel, Inc. 91
Computer Business Center 89
Computer Supplies Unlimited 26
Computer Swap Inc. 101
Computer System Integrators 42
Computerlane 31
Concord Computer Products 23
Copierland 38
Cypress Distributing 91,107
D-Data 39
DAO Products 8
Data Bureau 69
Digital Data 28
Digitech 71,73,75
Eagle Electronics 81
Eastern Enterprises 87
Excel Computers 89
FMS 33
Gates/Toshiba 25
GDC Computers 56,57
General Software 104
Generic Computer Systems 91
Golden Gate Shows 91,107
Guenther Computer 85
Hi Power Electronics 103
High Technology Distributing 3
HLC Computers 97
House of Computers 67
Hyperage 99
IIT Computers 101
IMC 2,83
Kenfil/Kraft 111
LA Computer 45
Legatech Computers 43
LH Computers 65
Linnex Computers 99
Logical Choice 93
May Computers 49
MIC 40
Micro Computer Consultants 98
Micro Star Software 13
Microcom Systems 11
Microlan 58
Microshows 97,103,108
Mid Cities 38
Mini Micro Supply/ NEC 51
Monarch Microsystems 93
Pacific Coast Technology 14
PC House 34,35,37
PC Plus Consulting 19
PC Plus Corp 6
PC&C 22
PCR Personal Computer Rental 48
PCS Business Center 105
Peripheral Land 112
Pillarco 16,17
Phoenix 100
QST Computer 79
Quality Computer 11
Quality Micro 28,55
SAECO 36
SCCE 93
Sigma Computers 10
Software World 20,21
Songtech International 97
SOS 18
Subscription Coupon 103
Supersoft 47
Tanstaafl 9
Timer 100
Tri-National Computers 18
Valerio Enterprises 24
Volt Temporary Services 48,99
Wellway, International 27
Western Micro Market 77
X Caliber Distribution Co., Inc. 36
Xenon 46
Xerox Computer Repair Center 30

Tell them you saw it in MICROTIMES!



WASSELFISH — PixelPaint in FatBits mode, showing detail on the pixel level. Artist: Patricia Coleman, Los Gatos

spective, and slanted — in full color, of course. *PixelPaint* also allows the free rotation of graphics — including text!

Dealing With Color

Directly below the tools palette are boxes that define how *PixelPaint* will create colors. The first box offers three options: foreground color, "blend" color, and background color. The foreground color determines which color (or shade of gray) will be used for filling areas of the document. Blend? More about that later. The background color sees occasional use, such as in defining "backgrounds" behind text entries.

The next box down defines the patterns for the foreground color. A variety of standard patterns are offered, and each can be "customized" from an option on a pull-down menu.

How are colors determined for *PixelPaint*? The Macintosh II stands ready to create screen colors from over 16 million possibilities. However, current Mac II video cards can only support 256 colors on the screen at a time, so *PixelPaint* allows the user to define the range and textures of color used for a *PixelPaint* document. A pull-down menu item allows the user to select a "color palette" from a list, or to create a custom color palette.

The color palettes available in *PixelPaint* are unique to this program, and are different from the Mac II's built-in system colors. Once a color palette is selected for a document, it applies all of its colors to the document. This is a mixed blessing: it allows the user to precisely define the colors available to the document, but can interfere with the "system colors" used by the Macintosh II. In most cases, there's no clash, but SuperMac's programmers are working to correct this in a future version of *PixelPaint*.

Special Effects

PixelPaint consists of two sets of tools: Normal Tools and Special Effects. Since both sets affect pixel-oriented graphics (rather than "object oriented" graphics), they work interchangeably on the current document.

The Special Effects set of tools is where *PixelPaint*'s abilities really shine. With each tool selected from the tool palette, a special pull-down menu appears, showing the options for that particular tool. This is where the "blend" selection of the color palettes comes into play. For example, the user can select the "line" tool, and choose a foreground as blue, and a blend as purple. Then, with the line tool, lines drawn in *PixelPaint* will be created in a smooth, even, color transition from blue to purple.

To put things in perspective, PixelPaint is a Macintosh II ONLY application. Not only that, you need a Mac II with at least two megs of RAM memory, a hard-disk drive, a color monitor, and a video card upgraded to display 256 colors.

The same is true for "filled" objects. Create a filled box with the same selection of blue-to-purple, and the box will be filled with a gradient of color, ranging between the two colors.

The way that colors are filled can also be adjusted: another pull-down selection offers the flexibility to fill colors from bottom to top, top to bottom, left to right, right to left, or as a "sunburst"; the foreground color in the center, flaring out in circles to the background color. A number of other fill options are available. Dazzling. Spectacular. And ready at the touch of the "fill" command.

When a section of a picture has been filled with a color blend, it would be nearly impossible to exactly match a color from the midpoint of a blend. For this, *PixelPaint* offers an "eye-dropper" tool. Simply position the eye dropper where you want to "pick up" the color, and click: the foreground color will automatically change to that exact hue. Holding down the tab key while using the eye dropper blows up the area around the eye dropper to fatbits mode, so an exact pixel can be selected for a color match.

About The Shadow

Unique to *PixelPaint* is the ability to create "shadows" behind an object. Draw a circle, and *PixelPaint* can create a grayed shadow behind that object. The location of the shadow can be adjusted by the user to create a shadow in any direction.

But creating a grayed shadow is just the start. Another menu item allows the user to adjust the characteristics of the shadow. For example, the shadow can be selected in a certain color. Also, *PixelPaint* offers the ability to "blend" shadows up to the object. An object can be drawn with a blue fill pattern, and its shadow can be defined to cover the spectrum of the rainbow, starting at the shadow, and building up to surround the object.

Working With PixelPaint

Covering all the features available with *PixelPaint* would probably fill this entire issue of *MicroTimes*. The more you work with the program, the more depth and possibilities are revealed.

PixelPaint makes extensive use of "pop-out" sub-menus (appearing to the right side of the pull-down menus), and "pop-up" menus (which appear when a single control is selected). The interface and controls are intuitive; I know several folks who have mastered the program without ever cracking the manual.

Large screens are supported by *PixelPaint:* the size of the drawing area is determined by the available memory. Contrary to information in the User's Manual, it's *possible* to open *PixelPaint* on a one-meg Mac II. With one meg, *PixelPaint* forces the user to select a small area of a document to work on. A two-meg configuration allows nearly a full-page view, and the user can scroll to areas not displayed. Five megs are required to support a full-screen 19" color monitor.

Which brings up a minor annoyance with *PixelPaint:* the special "fill effects" only affect the area of the document that's on the screen. Shrink the document window down, use the paint bucket for an area fill, and only the portion of the document that's visible is affected. *PixelPaint's* programmers are aware of this, and hard at work on a fix for the next version.

Another minor glitch has to do with "auto scrolling" in the Fat Bits mode: it's not supported with *PixelPaint*. If you try to do detailed image editing in the Fat Bits mode, when you hit the edge of the window, that's it. The user must click down on the scroll boxes to continue the edit into the next region of the document. Again, something to be addressed in a future release of *PixelPaint*.

What Do You Do With PixelPaint?

To be blunt, color output with *PixelPaint* is a problem. Because of the range of colors that can be created with the program, *PixelPaint* does not print in color on Apple's ImageWriter II.

Worse, *PixelPaint* won't allow the user to print color separations of the image, to be used for a color offset press. Again, this may be addressed in a subsequent release of the program.

Included with the program is some sample artwork, printed with the new Tektronix 4693D Color Image printer. This printer resolves to 300 dpi in full color, and the resulting image is rich, vivid, and sharp. However, this printer will retail for about $10,000, and will still only produce first-generation output — nothing that can be used by commercial printers. (Of course, a color separation could be made from the Tektronix's output, with a corresponding reduction in clarity and color saturation.)

Several manufacturers have recently announced equipment to produce 35mm color slides from *PixelPaint* images. While this equipment will also nudge the $10,000 mark, a number of commercial services will transform color *PixelPaint* images into color slides for about $10 per slide.

PixelPaint images can also be cut-and-pasted into other programs. For example, *PixelPaint* graphics can be used for animation in MacroMind's *VideoWorks II.* These two programs can be run under MultiFinder, but you need at least five megs of RAM to pull it off.

It's important to realize that *PixelPaint* is a breakthrough product for the Macintosh. In its first release, it shows power and potential guaranteed to dazzle the most jaded Macintosh user. There's no doubt this program will evolve in harmony with color printing technology. By the end of this year, *PixelPaint* could well represent a new industry standard for color graphics production.

PixelPaint retails for a lofty $495, but for a limited time will be included free with the purchase of SuperMac's Spectrum graphics adapters. For further information, contact SuperMac Software, 295 North Bernardo, Mountain View, CA 94043. (415) 964-9694.

Copyright © 1988 by Jim Wolcott. All rights reserved.

DVORAK'S LAST COLUMN

The New Emphasis

Mac & The Businessman

By John C. Dvorak

Kiss the Macintosh goodbye. This will probably be the last year of progress for the machine. Fact is, there may be no progress whatsoever. I hear about two things that brings me to this grim conclusion. First, Apple says it will completely rewrite the operating system of the Mac. Hah! It can't be done. The company will screw it up and resort to UNIX.

Second, and more importantly, Apple intends to increase its promotional emphasis toward the businessman and push aside the enthusiast. Apple has turned ultra-corporate. So much so that 60% of their efforts will be spent selling to corporate drones this year. The small-time end user is to be phased out in favor of the Fortune 500 geek. That spells doom for sure. So much for all that "rest of us" crap-ola.

Apple has turned ultra-corporate. The small-time end user is to be phased out in favor of the Fortune 500 geek. So much for all that "rest of us" crap-ola.

No more wacky commercials with a muscular gal chucking a sledgehammer at a giant video screen. No more self-appointed visionaries. In fact, no more vision. Just the cool, calm, collected Nazi goose step into the hallowed halls of grey American corporations. The information worker ants are there staring at spreadsheets — finding ways to make sure they spend *all* that money in the budget so they can get more next year.

I guess this was Steve Jobs' legacy. He was the kid who wanted to win over the corporate world. An attempt to be accepted, I suppose. The futuristic but ill-fated Lisa was the first attempt. It was received as though it were a mainframe machine from Atari. Next came the Mac. It ran smack dab into the middle of the hackers and enthusiasts who fell in love with the thing. They did things like (omigod!) design games to run on the machine. "Let's find those guys and shoot them," suggested an Apple executive. "No. Wait! They'll die off like vermin without water," suggested another. "Leave them to their own miserable fate." Someone knew something.

Apple has not stopped on its ill-conceived death march to oblivion trying to create the ultimate machine for the information worker (aka clerk). The information worker was another zombie concept dreamed up by Jobs, a man who never really worked as an employee except perhaps when he was in India looking for the ultimate truth. His sympathy for the plight of the poor guy in the office was nil. "Give him a computer. Make him work longer hours."

Make him work longer hours is the message reflected in many an Apple ad. It has not vanished.

Now we have Sculley to implement this scheme. Sculley is nothing more than Steve Jobs without the maniacal interest in the technology around him. Things to Jobs are "really neat." They're "keen-o." To Sculley they're "fascinating" and sometimes "worth examining."

How did it happen? Hard to say. Wozniak and Jobs, the founders of Apple, are gone for good. This is a fact of life that is too often ignored. Wozniak spends his money on rock concerts and has a hobby company which manufactures little infra-red TV controllers that nobody can find to buy one. Woz has also decided to become a full-time teacher. "Billy! Do you have gum for everyone?" I think that while this is an admirable pursuit for a grizzled retired guy, it's no more than a ridiculous exercise for Wozniak.

Meanwhile, Jobs refused to take a simple course in management and left Apple in a huff with a few mutineers. He now dreams a dead dream of a comeback on his ship, the Bounty, headed for an island from which there is no return.

Both their fates are sealed. There is something symbolic in their destiny as it symbolizes the bad attitude of all kids whose formative years were the dreary dope-riddled '70s. Their peer group were the rum dum '60s hippie dead heads who, in jest, quoted Tim Leary at the kids.

No more self-appointed visionaries. In fact, no more vision. Just the cool, calm, collected Nazi goose step into the hallowed halls of grey American corporations.

The '60s hippies meanwhile became yuppie bunglers, drinking tooth staining coal black Zinfandel, driving BMWs, and wearing chic sunglasses with idiotic ropes hooked to them so the glasses won't fall to earth if the wearer is clubbed in the back of the head with a two-by-four. The '70s stereotypes, still hung over from bad LSD and methamphetamine sold to them by the '60s stereotypes, kept the faith and ended up baffled by the whole changing scene. Most of them are still dizzy if they aren't strung out on cocaine.

The information worker was another zombie concept dreamed up by Jobs, a man who never really worked as an employee except perhaps when he was in India looking for the ultimate truth.

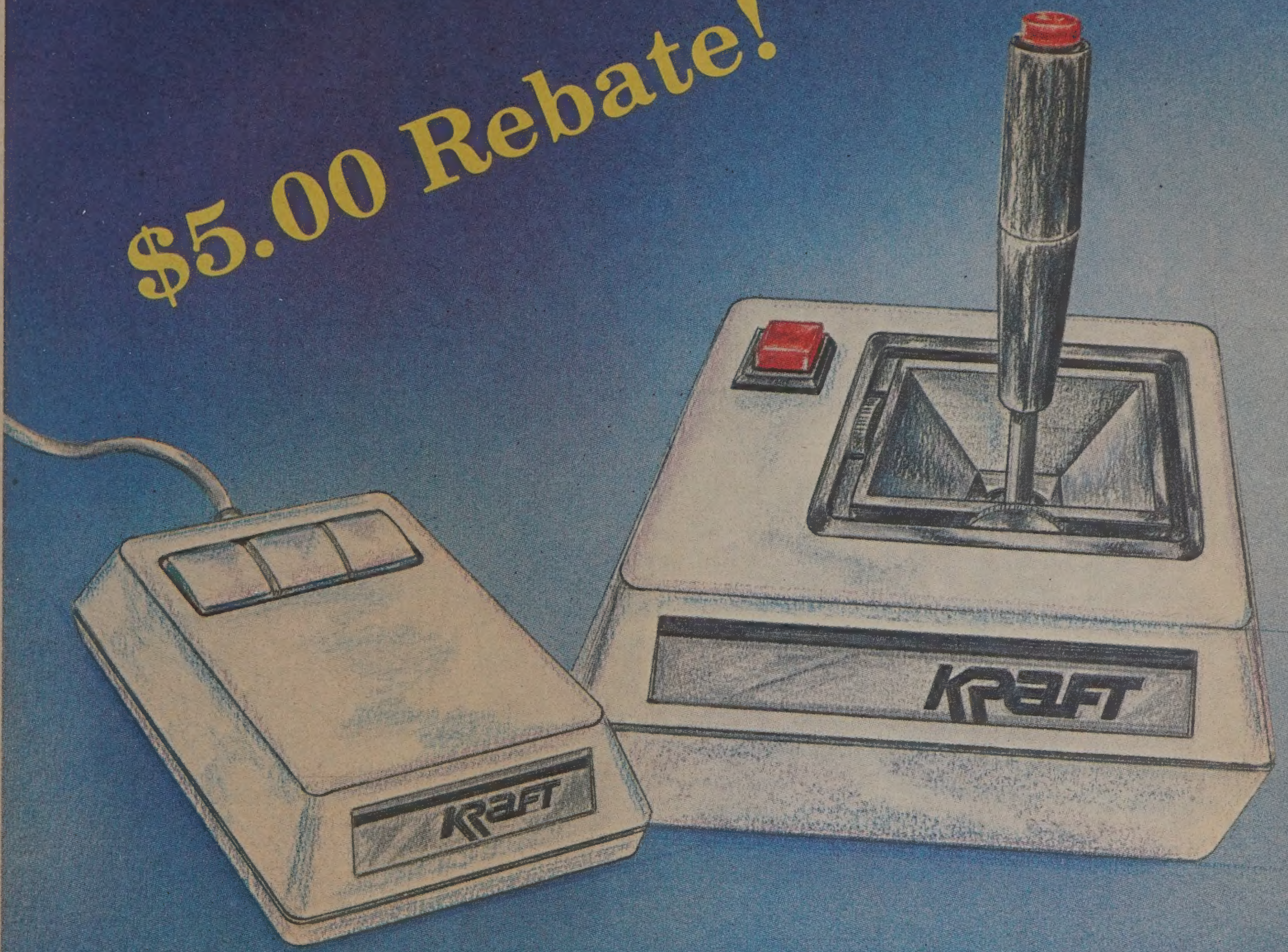
Caught in the middle were Jobs and Woz, both mumbling to themselves and driving expensive hot cars too fast for their reflexes in a vain attempt to understand the nature of the universe as it applies to them. An outsider always takes two steps back when this phenomenon is observed. It scares me too.

Left in the lurch is Apple...now peopled by guys with stupid grins wearing conservative suits. They all look like the cat that ate the canary.

More amusing is the reaction of all this by the slobs and hackers who are responsible for the popularity of the machine in the first place. They think it's somehow great. That is, until they get elbowed out of the way by some suspender-wearing corporate type with capped teeth claiming to be an expert at quick-draw subroutines.

The magazines are no different. They don't see what's ahead. I was amused by a recent issue of *MacUser* when Robert Wiggins casually mentioned how his column which has the word "pinstripe" in the title is now *de rigueur* when before it was seen as an anomaly. He thought the switch was great. He's in for a surprise when his readership is all bankers.

The irony to the "new emphasis" is that this is what Apple wants. The idiotic Apple Mac advertisements, for example, appeal only to cretins who do little more than push paper in a bloated bureaucratic Fortune 500 (burp!) corporation. These huge dinosaurs of business do little more than stumble and stomp and fall all over themselves while contributing little to society or progress. Only a pitiful preoccupation with the bottom line manages to bring profits from products that only survive in the marketplace because the Japanese haven't yet targeted them for destruction. It's pathetic. Now they embrace the Mac and the Mac people think this is great. My reaction: hah! □



Now thru May 30, 1988 when you buy a **Kraft Premium III** Apple® or IBM® compatible joystick, or an IBM® compatible **Micromouse** receive a **$5.00 Cash Rebate** from **Kraft!**

Kraft Systems is the worlds leading producer of computer joysticks, input devices and related computer peripherals. Kraft invented the Apple® and IBM® joystick and the related technology, with several design patents to support this claim. No other company in the industry has the innovation and commitment to quality and workmanship than **Kraft Systems** does.

With products from **Kraft** you can be assured that you are choosing products of the highest caliber!

Kraft Systems . . . Feel the Difference!

KRAFT SYSTEMS INC.

450 W. California Ave. • Vista, CA 92083 • (619) 724-7146

At These Authorized Kenfil Dealers

Software Central
25 South El Molino
Pasadena, CA 91101
(818) 793-4101

PC Upgrades
16935 Van Owen Street, Ste D
Van Nuys, CA 91406
(818) 708-2853

Software Centre
916 North Mountain Avenue, Ste 6
Upland, CA 91786
(714) 946-5665

Software Centre
391-R State College Blvd
Brea, CA 92621
(714) 990-6967

Gateways
8808 McKinnon Avenue
Bakersfield, CA 93306
(805) 366-0441

Software Supermarket
11960 Wilshire Blvd.
Los Angeles, CA 90025
(213) 207-1495

Data Bureau
1919 Wilshire Blvd.
Santa Monica, CA 90403
(213) 828-7752

Shore Solutions
5846 Naples Plaza
Long Beach, CA 90803
(213) 433-6749

L.A. Computer Center
12002 Pico Blvd.
Los Angeles, CA 90064
(213) 461-1859

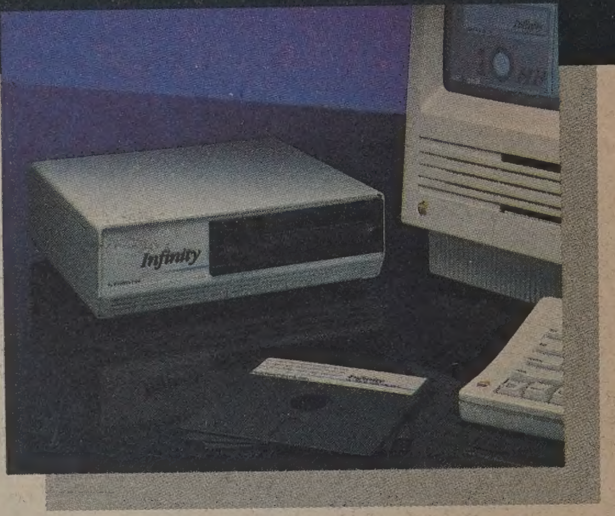
House Of Computers
10929 Santa Monica Blvd.
Los Angeles, CA 90025
(213) 479-7745

ComputerEase
10590-A West Pico Blvd.
Los Angeles, CA 90064
(213) 559-1763

Simply Software
3001 Sepulveda Blvd.
Manhattan Beach, CA 90266
(213) 546-2467

WHAT PERFORMS LIKE A HARD DISK NEVER RUNS OUT OF STORAGE ?

READS IBM FILES ON YOUR MacINTOSH ? ?



Introducing Infinity™ Drive by Peripheral Land ---- the SCSI 10MB removable disk system that will change the way you think about disk drives.

Now you can end the limitations of standard hard disk capacities and their lack of transportable data. **Infinity**™ not only performs like a hard disk drive (65 millisecond access time) but it provides unlimited storage capacity with removable 10MB diskettes.

Run out of room? Just insert another inexpensive diskette. Your storage capacity is infinite. And the cost is amazingly low: Only $18 for a 10 megabyte diskette. That's $1.80 per megabyte!

Communications bridge between your Macintosh and IBM AT and XT computers.

The **Infinity**™ System reads and transports IBM MS-DOS files from 1.2M and 360K AT and XT diskettes; it lets you display, edit and print IBM files on your Macintosh. That's flexibility!

Each **Infinity**™ Drive comes with LaserSpeed™ a LaserWriter spooler by ThinK Technologies, BackPrint™ an ImageWriter spooler by Cortland Computer and PLI's advanced backup utility with image, file, folder, volume and incremental capabilities.

Infinity™ is compatible with Apple's complete line of Macintosh computers.

Stop by your nearest Peripheral Land dealer and test drive an **Infinity**™ Drive today and see the difference between standard disk drives and **Infinity's** infinite capacity. Or call us for information and the name of your nearest Peripheral Land dealer.

Peripheral Land, Inc.
47800 Westinghouse Drive, Fremont, CA 94538
Telephone (415) 657-2211 • Telex 650305-1733MCI • FAX (415) 683-9713

Infinity is a trademark of Peripheral Land Inc. LaserSpeed is a trademark of ThinK Technologies. BackPrint is a trademark of Cortland Computers. Macintosh, ImageWriter and LaserWriter are trademarks of Apple Computer. IBM, AT, and XT are trademarks of International Business Machines. ©PLI 1988